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GLEANINGS IN BEE CULTURE

VOL. 35

JAN. 15, 1907.

NO. 2.



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MEDINA, OHIO.*

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GLEANINGS

IN BEE CULTURE

A Journal Devoted to Bees, Honey, and Home Interests
Illustrated : Semi-monthly : One Dollar per Year
Published by The A. I. Root Company, Medina, Ohio

Vol. XXXV.

JAN. 15, 1907.

No. 2

STRAY STRAWS

By DR. C. C. MILLER

A POSTAL from Frank Benton locates him at Hongkong, Nov. 28. I hope he'll get away with his feet full size; but then I believe it's only the women who have their feet squeezed in China.

R. F. HOLTERMANN seems to think it dangerous to feed honey in any case, p. 20. Whew! that's caution with a vengeance! Of course, his rule is a safe one, but it would be pretty hard for me to adopt it so long as there is no foul brood within ten miles.

STENOG is getting me all tangled up about pronouncing propolis, p. 16. When I saw the discussion the question certainly was whether the accent was on the first or second syllable. As to whether the first syllable is *pro* or *prop*, there is authority for both.

YOU ARE RIGHT, I think, Mr. Editor, in saying, p. 16, that a stove is better in the cellar than calcium chloride, and in some cellars it might be cheaper. But the whole outfit for the chloride ought not to cost more than \$5.00, and in some cellars it would cost \$5.00 to make a chimney; besides, the salt can be used over and over again, and the fuel in the stove can't

EVIDENTLY the English is a hard language to use without getting things muddled. In reply to the question whether I thought the bees would use dry dust for brood-rearing, p. 16, I replied, "I hardly think the bees would waste time gathering useless material." By that I meant that, as the bees had spent time gathering it, I thought it would hardly

be useless, but useful, although ye editor's question shows that he understood it the other way.

C. BOHM has been making a study of drones. The drone has a period of youth, 9 to 14 days, in which he seldom leaves the hive; then a transition period (he doesn't say how long), when he flies more or less; then full maturity, during which time only he is capable of service, this period being of short duration, when death ensues. This accounts for the need of so many drones. It seems, also, that drones should emerge two weeks or more before needed.—*Leipz. Bztg.*

I HAVE DONE a lot of studying over what Mr. Alexander says in the first full paragraph, p. 29. My belief has always been that there was an important gain to leave bees out of cellar till after the latest flight day in November, thus shortening the period of their winter confinement. His testimony, I must confess, shakes my faith in that belief. I heartily wish that he may be right and I wrong, for it would simplify matters very much to take bees in at a certain date without the uncertain waiting for another flight-day that may never come.

GLEANINGS would like to reform its spelling if big journals like *Ladies' Home Journal* would blaze the way. Well, look at the January number of that journal, p. 19, and you will find the first blaze, the Roosevelt spelling being used in one department. Good! [This is good so far as it goes; but GLEANINGS would hardly feel like helping to blaze the way with only one big gun ahead. If the *Ladies' Home Journal* starts out with the reform, doubtless others will follow soon. When that is done, we little fellows will try to get into the band-wagon.—ED.]

WHETHER bees leave wire-cloth separators clean of burr-combs or not, p. 18, may also depend on whether the bees are crowded or not. I can get almost any one of my colonies to build burr-combs between supers by

crowding them enough. [You are quite correct. But when bees attach burr-combs to wire-cloth separators, and leave fences or other separators alone in the same super, we are inclined to believe that the first-mentioned are more subject to comb attachments. This was the case with the experiments made by Vernon Burt, and it is the only right way to test a proposition of this kind, in our judgment.—Ed.]

A JAMAICA friend asks my comment on a clipping which relates that a writer in *Science* says bees can't sting you while you hold your breath. The only comment necessary is to say that it is boiled-down nonsense, with neither science nor sense. It went the rounds of the papers a few years ago, and no doubt many bee-keepers besides myself tried it, but none ever reported it a success. [We entirely agree with the doctor that all such talk is "boiled-down nonsense." We never had the patience even to try it, although we know of some who did, and found that the stinging business went on just the same.—Ed.]

THE NEW thousand-dollar license law of Chicago, which was proclaimed as a triumph for temperance, seems now to be causing joy, but it's all on the other side. Read the following from the *Brewers' Journal*:

"During the first eight months of the present year 3,066,505 barrels of beer were sold in this city (Chicago), an increase of 209,366 barrels over the same period of 1905. And now let the temperance cranks explain what they have gained by raising licenses to \$1000 per year."

When will good people learn that raising the license only entrenches more firmly the liquor power?

CANDLE-WICKING is advised, page 19, for making beeswax candles. My, oh my! Mr. Editor, I didn't think you were so old a man as that. Don't you know that candle-wicking has gone out of use almost entirely? You can't buy it in Marengo, for I asked. But you can make a beeswax candle with cotton wrapping-twine for a wick. Just warm your beeswax and squeeze chunks of it around the string. [Why, candle-wicking is a common article in any engine-room or any other place where stuffing-boxes are used to prevent the leaking of gas, water, or steam. Any common valve will have around its stem some sort of packing—usually candle-wicking. I suspect, doctor, more of it is made now than was made during the days of your grandmother, but it is used for an entirely different purpose.—Ed.]

YE EDITOR, p. 19, thinks the new law will allow a 14-ounce section to be labeled 1 lb. I doubt. [The law does make a little discrimination in the weights of food products where nature, so to speak, does the weighing; but nevertheless I think it is bad policy at any time to label a section as holding three-fourths, one-half, or two pounds. While a section may hold approximately these weights, they are misleading, and the figures ought not to be used. It is well enough to say that

comb honey is worth so much a pound; then if the retailer puts a section on the scales the customer pays for it at a *pro rata* pound rate. Nor is there the slightest objection to marking the price on each individual section—there, now, doctor, we did not intend to bring up that old controversy, so we will stop before we begin.—Ed.]

"BUT A FEELING of sadness comes over me when I hear of graft and greed and extortion," p. 43. Yes, Bro. A. I., never before were the daily papers so full of such things; but isn't there more gladness than sadness about it? for the accounts come only because such things are beings exposed and punished. [Yes, and this very thing leads us to believe that better times are coming. The time was when any legislation that affected adversely "certain interests" would be turned down; but that time has gone by. Investigations are rife, exposures are made, grafters and bribers are being sent to the penitentiaries, and sometimes the muck goes too deep and in the wrong places; but out of it all, good is coming. The passage of the rate bill and the pure-food bill through the same forces of reform are made possible. The signs of the coming millennium are, perhaps, a great way off, yet they are more in evidence now than ever before, and why? Because the common people are reading more, and finding out after all that their own individual vote means something. The bosses are beginning to lose their influence.—Ed.]



HENRY DE MERCADOR-BELLOCH, founder of the Spanish *Review of Apiculture*, also translator of important bee books, died December 9th. He was the leader of the new bee-keeping in Spain.

A FOUL-BROOD LAW FOR INDIANA.

ALL bee-keepers of Indiana interested in securing the passage of a foul-brood law for their State are requested to write to Walter S. Powder, 513 Massachusetts Ave., Indianapolis. It now seems high time that a law of that kind be enacted. The States to the north, west, and east of it are already protected by suitable legislation. The matter now seems urgent as well as opportune for the bee-keepers of Indiana to take hold of the matter in earnest.

Later.—The following which has just been received from Mr. Powder will explain itself:

I have just secured the free use of room 12 at our State House for Wednesday, February 6, for a meeting of Indiana bee-keepers. It is hoped and urged that the meeting will be well attended, and that we may organize ourselves into a permanent State association.

One of the important objects of the association will be naming a committee to secure foul-brood legislation for Indiana. WALTER S. POWDER.
Indianapolis, Ind., Jan. 10.

GOOD CANDY (POWDERED SUGAR AND HONEY) NOT SUITABLE AS A WINTER FOOD.

In this issue, on page 98, we refer to some experiments made at Medina in reference to feeding bees various kinds of candy during winter. The statement is there made that the Good candy—the mixture of powdered sugar and honey kneaded into a stiff dough—gave good results. In referring this statement to the man who made the experiments he says we misunderstood him—the Good candy was the feed that gave the most trouble and that ran down between the frames, and moreover it was the hard candy, made of sugar and water, that gave the best results. Inasmuch as a misstatement was made it is only proper to make the correction right here. Dr. Lyon had no trouble with the Good candy, because his bees were wintered outdoors, where there would be less moisture and a much lower temperature. In this respect our findings were different from those of Dr. Lyon.

OUR FRONT COVER-PAGE PICTURE.

Our front-page illustration represents the Rev. P. Cavaille, a monk of the order of Grande Trappe, in the act of hiving a swarm. In Europe the clergymen, whether they are monks, preachers, friars, brothers, abbés, or what not, are very often ardent disciples of the bee-keepers' art, and usually they make it both pleasant and profitable. And it seems bee-keeping is peculiarly fitted to their temperament and environment. Nothing could be more befitting to them unless it is the art of gardening, in which they frequently excel. Both Dzierzon and Schönfeld were clergymen, and the word "Father" is often seen before the name of German apicultural writers, and "Abbe" or "Curé" before the surname of French writers. Mr. Ralph Benton, in our issue of Nov. 15, gave us a very entertaining narrative of a visit to an apiary belonging to the Trappist monks near Rome, from which one can get a vivid glimpse of cloister life in Europe. We have Trappist monks in Kentucky, but we understand they do not keep an apiary as their European brothers do. In England the monks of St. Mary's, Buckfast Abbey, keep quite an up-to-date apiary, and some of the brothers write for the bee-papers very often and seem to read GLEANINGS and A B C; for, contrary to general opinion, these religious bee-keepers are quite modern in their ideas. The English monks we mention were expelled from the Grand Chartreuse of France some years ago and took refuge in England.

SHUTTING BEES WITHIN THE HIVES DURING WINTER.

On p. 1559, Dec. 15th issue, we referred to some experiments we were conducting in the matter of shutting bees in the hives by means of a wire-cloth vestibule for outdoor colonies, and a rim three or four inches deep,

with wire-cloth sides interposed between the bottom-board and hive-body for the indoor colonies in our cellar. The results thus far, while not decisive, are rather unfavorable. The confined bees seem to get uneasy; and when they learn they can not get out they stir up the whole colony. We found dysentery was starting in a good many of our cellared colonies at a time of year when we never had it before. The results outdoors with the wire-cloth vestibule were scarcely any better. Apparently the few bees that try to get out, and can not, seem to be able to stir up the whole colony. When they begin to roar, the contagion, so to speak, in the case of cellared bees, spreads to others.

Now, understand, we do not as yet condemn the method, for we are continuing our experiments just the same, to discover, if possible, whether the confinement or some other condition is responsible for the unfavorable conditions. We speak of this at this time in order that some of our readers who may be experimenting along these lines may be on their guard.

Perhaps the reader will say we ought to have known better; but the reports of one of the best bee-keepers in the country, Mr. Herzhiser, were so favorable that we felt constrained to try it for the cellared bees. For the outdoor bees the removable-screen vestibules looked as if they might be a good thing, especially as it was designed to remove them when they should be removed, and to keep them in on deceiving days when the bees ought to be kept in. We shall see later.

THE EFFECT OF THE PURE-FOOD LAW ON THE GLUCOSE INTERESTS; GLUCOSE MIXTURES MUST BE LABELED FOR WHAT THEY ARE.

In GLEANINGS for Nov. 15, page 1418, appeared an editorial in these columns, to the effect that the new national pure-food law would be a severe blow to the glucose interests of the country. The *American Food Journal*, of Chicago, publishes this editorial entire, but dissents from it in this wise:

We are a trifle skeptical about the new national law being a blow to the glucose interests. Several new plants are being constructed, the largest in Joliet, Ill. The law legalizing mixtures, compounds, and blends will allow unlimited opportunities to sell a mixture of honey and glucose, and probably compel States to allow its sale which now prohibit it or require it to be labeled adulterated.

We were not unaware of the reports in the current press, to the effect that the Standard Oil Co. was buying up glucose-factories and distilleries, with the apparent intention of using both to make denatured alcohol, which, unless its production were controlled, might be a serious competitor to its gasoline. It was also reported that Standard was re-equipping and rebuilding some of these glucose-factories, but, apparently, not for the purpose of making glucose for the market, for it seems clear that the starch from which it is made will have to be used for something else.

Our contemporary says, "the law legalizing mixtures, compounds, and blends will allow unlimited opportunities to sell a mixture of honey and glucose, and probably compel States to allow its sale, which now prohibit it or require it to be labeled 'adulterated.'" Very true, the mere matter of mixing or compounding has never been objected to, neither is there any national law to prevent it; but it was the mixing of several ingredients, and selling them under the name of one, and all at the price of the highest, to which exception is taken. But the *Food Journal* man does not state that such mixtures of honey and glucose would have to be labeled for what they are. Consumers will not buy glucose syrup when they know it. The experiment has been tried, and proved a failure. We bee-keepers are not afraid of glucose and honey when no deception is used in foisting the combination on the public. Or, to put it another way, we do not object to the wolves, but we do protest when they are allowed to masquerade in sheep's clothing.

Referring again to the alleged glucose-plant or plants which are being constructed, it is well known that such institutions have been putting out what is known as gluten foods. A good deal of these foods is used by dairymen. If the Standard Oil Co. has bought up these glucose-factories, it probably will continue to make these stock foods as before and convert the by-product, starch, not into glucose, but into denatured alcohol. True, it may make some glucose; but there is likely to be but a small demand for that article, for it can not now, in most States and interstate and territorial business, be used as an adulterant.

There have been numerous items in the press, referring to the alleged troubles of the glucose people in States where there are pure-food laws. Here is one from the *Cleveland Press* for Dec. 7th last;

DEATHS LAID TO GLUCOSE TRUST.

NEW YORK, Dec. 7.—Fearing a wholesale poisoning of children by candy, the city authorities are trying to prevent the glucose trust from shipping here from Philadelphia tons of glucose which the trust virtually admits may have been responsible for the death of women and children from sulphites used in making glucose to lessen the cost.

The glucose trust is controlled by the Standard Oil combination, and has paid fines and costs amounting to half a million dollars in Philadelphia. One girl is dead here, poisoned by sulphites.

Here is another from the *Rural New-Yorker*:

At a total cost to the glucose trust of half a million dollars, settlement was made December 6 at Philadelphia by D. C. Gibboney, acting for State Dairy and Food Commissioner Dr. B. H. Warren, and Attorney-General Hampton L. Carson, acting for the State of Pennsylvania, of all cases based upon sales of candies containing glucose adulterated with poisonous sulphites. As a result this particular kind of food poisoning has been abolished in Pennsylvania at one stroke. Moving its adulterated product out of Pennsylvania back to New York, and the costs which it agreed to pay, cost the trust \$500,000.

How much of truth there may be in all of these items we do not know; but evidently the prospects ahead of the glucose interests are not so rosy as the *Food Journal* editor would have us believe, especially if we take into

consideration that the national pure-food law has only just taken effect. If the glucose interests have 500 suits in one State, and if they have paid half a million in fines, as alleged in another State, what may we expect when those same interests come against the whole United States? Apparently their troubles have only just begun. We still believe that glucose, as a product (whatever we may say of the factories that formerly made it) have received almost a knock-out blow.

WHAT THE GLUCOSE PEOPLE ARE TRYING TO DO.

Later.—It appears that the glucose interests are a little worried over the action of the new law. According to the *American Grocer* they are asking for "a ruling on their products which would do away with the use of the word glucose, substituting therefor either corn syrup or corn sugar." The makers of the stuff admit that glucose "is a name against which a very great prejudice exists."

Does this mean that glucose has acquired so unsavory a reputation that its makers would like to cover up its identity and character by another name or names that would fool the public, on the principle that a professional crook finds it convenient to use several aliases rather than his own name? We hope not. Large quantities of glucose have been used in jams and jellies, and heretofore it has not been necessary to state the fact on the labels of such articles. But now under the new law, if glucose is used it must so state on the label. But "a very great prejudice exists" against glucose, and its makers would like to have corn syrup, which they claim is "wholesome," substituted. We hope the Honorable Secretary of Agriculture and his colleagues will make no such ruling. Let every thing be sold under the name that the public knows, and then there will be no deception.

THE NEW LAW AGAIN, AND THE UPWARD SLANT ON THE PRICE OF HONEY.

ATTENTION is drawn to the remarkable communication in the *American Bee Journal* for Dec. 20, of Mr. C. P. Dadant, on the subject of artificial honey, or sugar known as "glucose" to the trade. Mr. D. relates how, many years ago, his father had gotten up a circular petition which he succeeded in having signed by 10,000 bee-keepers, with the avowed intention of placing the matter before Congress; but, for want of a genuine interest, the matter was allowed to drop into "innocuous desuetude." He is evidently somewhat astonished at the effect of the new pure-food law, though as a matter of fact it had not yet come into force when his communication was written. He admits he had a grudge in his heart against Prof. Wiley, the author of the famous honey canard, but he now willingly forgives him, in view of the part he played in securing the enactment of the Hepburn pure-food law.

He says the dealers around his locality are already buying honey, whereas before they were quite well satisfied with the spurious

goods. It ought to be remembered, also, this same thing is taking place all over the entire country. In sympathy with this movement the honey market has experienced a firmer tone, and the end is not yet in sight.

Honey is still much too cheap. It behooves every bee-keeper to see that the law is enforced in his locality by being ready and willing to assist the government officials in gathering evidence; and as there is a force of at least half a million bee-keepers in this country the law should not lack for help.

Mr. Dadant, in the article referred to, calls attention to a fact not generally realized—that the sugar interests would work with us, as they too have suffered from adulteration as we have.

In Florida the makers of genuine cane syrup are already experiencing a benefit from the new national pure-food law, it is said. If the Hepburn law does not fully protect the consumer in every respect we may rest assured legislation will soon be provided which will. The new law is a wedge, and a big one, without doubt.

THE NEW PURE-FOOD LAW AS VIEWED BY
TWO OF THE LARGEST BUYERS OF HONEY
IN THE UNITED STATES; THE DANGER
OF SENDING OUT UNRIPE HONEY
UNDER THE LAW.

MESSRS. R. A. BURNETT & Co., of Chicago, and Hildreth & Segelken, of New York, are probably two of the largest honey-dealers, if not *the* largest, in the United States. A few days ago we wrote them, requesting their opinion as to the general effect of the new national pure-food law on the honey business—whether or not it would advance prices, etc. The following are their replies. They will speak for themselves:

Gentlemen:—You ask for our opinion concerning the national pure-food law. It will take some time to get it enforced. The tricky people will find some way of evading it for a time, but eventually it must be of great benefit to the nation; and as to the sale of honey, in our judgment it will at least not hinder it; but if the bee-keepers will let their honey ripen before taking it off the hives it will do more than any law passed in furthering its consumption.

R. A. BURNETT & Co.

Dear Sir:—We have always been in favor of a national pure-food law. The present law may not be perfect in every detail, but as a whole we consider it fair and just. It certainly is not calculated to injure those who comply with its provisions, but, on the contrary, they will be benefited by its enactment.

As to its effect on honey, we firmly believe that the enforcement of this law will greatly aid the sale of honey; in fact, we think that from now on only pure goods will find sale, for, to comply with the law, inferior or adulterated goods must be labeled accordingly, and this we think will stop the sale of them; therefore pure goods, in all probability, will bring better prices. Consumers, as well as manufacturers, should be found willing to pay the advance, as they will have a guarantee that they are getting the genuine article.

HILDRETH & SEGELKEN.

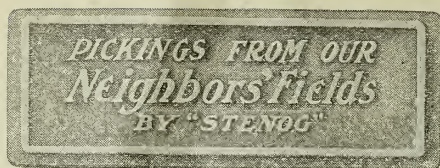
Mr. Burnett is apparently more conservative in his opinion than Messrs. Hildreth & Segelken. We wish, however, to draw attention to the importance of his last sentence. There are some old veterans in the business who may take off their honey before it is entirely capped or ripened in the combs; but

the average bee-keeper, at least, had better let the bees do their own ripening. The suggestion of Mr. Burnett is a very good one, especially as unripe honey on the market will suggest adulteration, even if it does not make the producer of it actually liable under the new law. We should be a little fearful, at least, that some chemist would declare some unripe honey as adulterated, and it might be very difficult for the producer to prove his innocence of the charge. All bee-keepers, therefore, had better err on the safe side by seeing to it that all honey shipped from their yards is thoroughly ripened, with a good body and first-class flavor for the kind of honey sold.

It is well to remember that the U. S. standard for honey allows only 25 per cent of water, and any in excess of this would *certainly* be construed as an adulteration. Producers generally should "paste this in their hats."

DEATH OF THE BARONESS BURDETT-COUTTS.

WE are very sorry to announce the death, on Dec. 30, of the President of the British Bee-keepers' Association, the Baroness Coutts, of London, England, whose loss will be severely felt by the bee-keepers of Great Britain, as she for many years was a sort of patron saint of bee-keeping over there. She was one of the most famous women of the 19th century, and, besides, was the bosom friend of Queen Victoria. Her name originally was Miss Georgina Burdett. Her father was an English statesman who sided with the plain people, though very wealthy himself. His daughter inherited his wealth, also that of her uncle, Thomas Coutts, a great banker of London. At the age of 23 she received as her portion \$10,000,000 in gold, weighing 14 tons, and with it the great Coutts bank of London. The first thing she did with her money was to look up Charles Dickens and with him go around relieving the poverty of the London poor, doing every thing possible to help them along. She established the National Society for the Protection of Children; also the Destitute Children's Society, for which she provided 300,000 dinners a year. She founded quite a number of technical schools of all kinds. She aided starving Russian and Turkish armies, and endowed three colonial bishoprics in English colonies. She founded colonies in Canada, and offered to furnish the means to relieve General Gordon, imprisoned in Khartoum. She financed a society to encourage poor persons to keep milch goats. She opened fishing-schools in Ireland. In fact, she was one of the greatest philanthropists of our age. She was born April 21, 1814, and was, therefore, 92 years of age at her death. When over sixty she married a brilliant young American, Mr. Ashmead Bartlett, who assumed the name of Burdett-Coutts, and became a member of the House of Commons. Needless to say, the Baroness Coutts was idolized by the English people, and well they might. Her like we do not see very often.



Mr. Spiegler-Kunnesdorf says in *Deutsche Illus. Bienenzeitung*, that he succeeded, by injecting bee-poison direct into the arteries of men afflicted with tuberculosis, in effecting a cure. Every five days the injection was repeated six times. After the second day of treatment the patients coughed but little. At the end of four days the bacilli developed no more.

The Italian government provides the following stations for the experimental study of apiculture:

1. Bieno (Novara); Passerini; observer, Cav. Carlo.
2. Bra (Cuneo), Alardo; observer, Sac. Filippo.
3. Castiglione Torinese (Torino), Marucco; observer, Teologo D. Giuseppe.
4. Marsango di Campo S. Martino (Padova), Zovato; observer, Cav. Bartolomeo.
5. Castel di Casio (Bologna); observer, Bettucchi Michele.
6. Solomeo (Perugia); observer, Monini Pietro.
7. S. Pietro in Campiano (Ravenna); observer, Gardini Silvio.
8. Montescudo (Forlì); observer, Pratelli Giovanni.
9. Iesi (Ancona); observer, Chiappetti Beniamino.
10. Treja (Macerata); observer, Perucci Carlo.
11. Torre S. Patrizio (Ascoli); observer, Mariani Cav. Mariano.
12. Rome; observer, Costantini Cav. Antonio.
13. Teramo; observer, De Michetti Agr. Vincenzo.
14. Orsogna (Chieti); observer, Di Bene Giovanni.
15. Lupara (Campobasso); De Leonardis Avv. Carlo.
16. Caserta, Raimondi Giuseppe.
17. Bisignano (Cosenza), Anselmotti Ciro.
18. Lagonegro (Potenza), Aldinio Pasquale.
19. Civitella Alfedena (Aquila), Armiento Vincenzo.

There is also a kind of school of bee-keeping at Caltagionne, in Catania, which also acts as an experiment station.

In a recent issue reference was made to the work being done by Mr. Isaac Hopkins, in New Zealand, in the way of spreading the principles of modern bee-keeping in that country and in dispelling some errors

that seem to cling tenaciously to the minds of some who take only a superficial view of things. It seems a sad comment on human nature that so much effort is necessary, the world over, to shield man from the ruinous effects of his own folly. How much has been said and done, for instance, to induce the growers of fruit to spray blossoms at a time when it would destroy the larvæ of noxious insects instead of doing so at a time when it would simply kill the blossoms! Even stringent legislation has been found necessary here.

As all know, considerable friction has been developed at times in this country between farmers and bee-keepers, and Mr. Hopkins has met the same trouble in his experience. To show how he has "met the enemy" I make the following quotation, which originally appeared in the "Australasian Bee Manual," but was printed later in Mr. Hopkins' bulletin on bees. In speaking of apiculture in relation to agriculture he says:

BENEFICIAL INFLUENCE OF BEES ON AGRICULTURE.

As to the intervention of bees in the cross-fertilization of plants, I can here only refer the reader for further information to the works of Sir J. Lubbock and of Darwin. The latter, in his work on "Cross and Self Fertilization of Plants," gives the strongest evidence as to the beneficial influence of bees upon clover crops. In speaking of the natural order of leguminous plants, to which the clovers belong, he says, "The cross-seedlings have an enormous advantage over the self-fertilized ones when grown together in close competition;" he also gives the following details of some experiments which show the importance of the part played by bees in the process of cross-fertilization:

"*Trifolium repens* (white clover).—Several plants were protected from insects, and the seeds from ten flower-heads on these plants and from ten heads on other plants growing outside the net (which I saw visited by bees) were counted, and the seeds from the latter plants were very nearly ten times as numerous as those from the protected plants. The experiment was repeated in the following year, and twenty protected heads now yielded only a single abortive seed, while twenty heads on the plants outside the net (which I saw visited by bees) yielded 2390 seeds, as calculated by weighing all the seeds and counting the number in a weight of two grains.

"*Trifolium pratense* (purple clover).—One hundred flower-heads on plants protected by a net did not produce a single seed, while one hundred on plants growing outside (which were visited by bees) yielded 68 grains weight of seed; and as eighty seeds weighed 2 grains, the hundred heads must have yielded 2720 seeds."

Here we have satisfactory proof that the effect of cross-fertilization brought about by bees upon the clovers and other plants growing in meadows and pasture lands is the certain production of a large number of vigorous seeds, as compared with the chance only of a few weak seeds if self-fertilization were to be depended upon. In the case of meadow cultivation it enables the farmer to raise seed for his own use or for sale, instead of having to purchase it, while at the same time the nutritious quality of the hay is improved during the process of ripening the seed. In the case of pasture lands, such of those vigorous seeds as are allowed to come to maturity and to fall in the field, will send up plants of a stronger growth to take the place of others that may have died out, or to fill up hitherto unoccupied spaces, thus tending to cause a constant renewal and strengthening of the pasture. The agriculturist himself should be the best judge of the value of such effects.

The beneficial effect of the bees' visits to fruit-trees has been well illustrated by Mr. Cheshire in the pages of the *British Bee Journal*, and by Professor Cook in his article upon "Honey-bees and Horticulture." In fact, even those who complain of bees can not deny the services they render. What they contest is the assertion that *bees do no harm*.



In regard to the two locations I referred to, p. 1172, I have kept bees in each place about 13 years, and believe I have stated the matter correctly. Still, I am not sure but Mr. Green's advice, p. 1421, is good when he advises moving my bees nearer to my best pasturage, although further from home.

It is risky to praise one article only when there are so many of value in Dec. 1 GLEANINGS; but that by E. W. Alexander seems so full of good sense I must call attention to it, and commend it, especially to our younger bee-keepers. I believe no one will go astray who follows his advice.

And again the pound-section question bobs up. Well, this is not to settle it, but rather to hinder its solution. Most of my No. 1 honey this year ran 23 and 24 lbs. to the case of 24 sections; but the honey from one yard of black bees will go fully a pound lighter. Shall we have one size of section for pure and grade Italians, and another for black bees?

Dr. Miller is undoubtedly right in saying that mice will more readily destroy empty combs than those with honey, but he does not, I think, give us the full reason for it. Mice are fond of honey, but with it they want some nitrogenous food, which the scattering cells of pollen in empty combs supply; and by working through the empty combs, or chewing them up they are able to get a well-balanced diet. Besides this, the empty combs are warm, and make a most excellent place for nests.

"Honey selling in Great Britain at 48 cts.?" Pray tell us where; who sells it? how much at that price? Is it a little bought by some lord, or aristocrat, or by the king himself for his royal family? How much will it take to break the market? I have shipped honey to England several times, but was able to realize only about enough more than honey was selling in this country to pay the extra cost for cartage, wharfage, freight, insurance, exchange, etc., which amounted to two or three cents per pound, I should say, but I had the satisfaction of knowing I could do it. [See our answer to Dr. Miller, on page 1556 of last year. Our British cousins are suspicious of foreign honey; and consequently such honey, even though just as good, will not begin to bring the prices of English heather.—Ed.]

Mr. Greene, on page 1420, is right in thinking that longevity a most important trait or quality of bees. When I said that "greater endurance means longevity" I meant what I said—that, if you have endurance, you have longer-lived bees. They will not so soon wear themselves out, and consequently will live longer. I can conceive of a colony of bees of very great endurance; but, associated with it, greater activity, so that their greater activity would wear them out as fast as less industrious colonies with less constitutional vigor; but I believe these are exceptions.

E. D. Townsend, in a most excellent article in GLEANINGS for Nov. 15, tells how to get better prices for extracted honey; yet in one thing I want, good naturedly, to disagree with him. He says, "It is estimated, and I have never seen it contradicted, that if comb honey sold through the commission man brings 14 cts. a pound, the freight, cartage, and commission will bring the price down to 10 cts. for the bee-keeper." Now, I have sold a good many tons—yes, carloads—of honey through commission men, and the amount paid for freight, commission, etc., rarely goes above two cents a pound. About $\frac{1}{2}$ cent is for freight, $\frac{1}{4}$ cent for cartage, and on cent for commission, although I have had it cost much less and sometimes more. [You are able to do better than most bee-keepers.—Ed.]

Quite right is the editor of GLEANINGS in thinking the outlook for the future of bee-keeping is bright. The pure-food law can not but make a sight of difference in the sale of extracted honey; and improved methods in marketing will add immensely to the demand for comb honey, I feel sure. "Up against 500 lawsuits in the State of New York," did you say the glucose people were, and that just after settling up for their adulterations in Pennsylvania for half a million dollars? This giant has looked with supreme indifference upon the discomfort of the honest producers of honey; but the day of reckoning has come. I am reminded of a conversation between two little girls. One says to the other, "Do you know what becomes of bad folks when they die?"

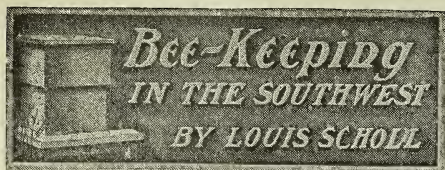
"No; what is it?"

"Why, don't you see they will go to hell and be burned up? But they won't be burned up right off, but will sizzle and sizzle and sizzle for a great while."

The adulteration business is evidently in the fire, and for one I shall enjoy seeing it sizzle and sizzle and sizzle for a great while.

Allen Latham, Dr. Miller, and the rest who have had lots of clover with but little honey from it, have my sincere sympathy. What is the cause? We know that the weather has much to do with it, but not all by any means, for our friend Latham could hardly have no good weather for clover, or but two or three days during the past 22 years, while he has

much good weather for apple-bloom, sumac, locust, etc. I have come to the conclusion that soil has much to do with it, and venture to guess that Mr. Latham lives in a section where the soil is light, or, at least, with but little clay. In such sections, as far as my observation goes, clover yields honey very grudgingly. Exactly the reverse seems to be true with buckwheat. It yields freely on light soils, while on clay it is, as a rule, almost worthless for honey. The honey business here in Vermont is mostly located in the Champlain Valley, within ten to fifteen miles of the lake, where the soil is largely clay. As soon as you leave this section the soil is lighter, and very few bee-keepers seem to prosper unless in sections where raspberries abound.



A HAPPY AND PROSPEROUS YEAR.

1907. What will you do to improve bee-keeping during this, another year?

No, Dr. Miller, there was no "queen of the convention" at San Antonio, perhaps because it could not be agreed upon as to the method to employ for testing the sweetness of all the 16's and 20's. Both "the saccharometer or the natural labial process" had their objections.

No use sealing bodies of empty combs without treating them frequently by fumigation to destroy the young larvæ hatching from the eggs of the wax-moth already laid on the combs before they have been put away. This accounts for combs being destroyed, many times, by the wax-moth larvæ, even when they were securely sealed away.

Moth-balls to protect combs against the ravages of wax-worms were recommended at the San Antonio meeting. Enough of these for one hundred bodies of combs can be obtained from any druggist for 15 cents. Simply stack the bodies with the combs up, putting some of the moth-balls into the bodies as they are stacked, and closing each stack with a lid on top.

Perhaps the honey vinegar with the unpleasant odor and taste to which Mr. Alexander objects was made from buckwheat honey. It is rather dark, and strong in flavor and odor, hence this may have something to do with it. All the honey vinegar I have tasted, of my own as well as others, was good, clear, and sharp, and without any ob-

jectionable taste of honey. In these cases, however, milder honeys than buckwheat honey were used in the making.

ARTIFICIAL RIPENING (?) OF HONEY.

Don't do the work the bees can better do for you. One of these is that of ripening honey. Very little, if any thing, is gained by ripening it artificially. It requires an extra outlay for suitable equipment, as a first reason, and the product does not compare with the delicious, well-flavored product ripened on the hive by the agency of the bees themselves, and savoring of a fragrant aroma that is entirely lost in the artificially ripened stuff. Besides, the well-ripened honey from the hives is the best advertisement for the producer, and brings from one to two cents a pound more than the regular market price. A much wiser plan is to put the extra outlay in more comb-supers, enough to hold the entire crop on the hives long enough to become well ripened. Pity the bee-keeper who has only one or two supers to a colony, necessitating extracting the honey from them every few weeks during the honey season to make room, and then "ripening" the honey in tanks.

CAKES OF CANDY FOR WINTER.

For winter feeding, nothing is better than cakes of candy made of pure granulated sugar, and laid over two small sticks on top of the frames directly over and in reach of the cluster, and covering the whole with some kind of mat for warmth. So, make the cakes 4 pounds of sugar to a gallon of water. This should be boiled carefully until the syrup solidifies quickly, when a little of it is dropped into cold water. The syrup is then poured into shallow greased pans and molded into cakes about 2½ inches thick. If these pans are large, the cakes can be broken into pieces of about 150 cubic inches; or cakes 2½ inches thick and 6 inches wide by 10 inches long, will weigh about 6 pounds—just right for the purpose. I have used common pasteboard boxes of these dimensions, which can usually be obtained free of charge at dry-goods stores; lined them with a sheet of paraffine or butter paper, and poured the syrup into them. After hardening, the paper is easily peeled off the cakes. The boxes can be used several times, simply laying over each a new sheet of paper and roughly pressing it down with the fingers.

TO ALLEVIATE THE PAIN OF STINGS.

All kinds of questions are sometimes asked me about what to do in case of stings from bees and other insects. The first thing I do is to suck the wound well to remove as much of the poison as possible. This, with me, is generally all that is necessary. To keep the place well covered with saliva for some time seems to give relief. This has a soothing effect. Honey spread over the sore place has a similar effect, and is one of the most ready applications, as it can generally always be easily gotten, especially when working with

the bees. In severe cases the wound should be washed well with warm water, then bathed in alcohol; then bind a folded linen wet with alcohol or vinegar over the wound, changing the application every ten minutes until the pain subsides. A slice of fruit—apple, peach, or tomato—bound lightly on the wound will help in many cases. This is most practical if the apiary is located in an orchard with ripe fruit. Many other remedies have been suggested but not tried by us in our apiaries.



MISTLETOE—OUR FIRST HONEY-PLANT.

SEE PAGE 110.

Often I have thought whether this should be called the last or the first of the season. It sometimes begins to bloom, and bees roar on it early in December. Other plants may bloom almost up to this time, and we might call mistletoe the last of the season. But with the beginning of mistletoe bloom, really begins the real new life with the bees for the following year, and especially marked is this during a year with an early spring.

Mistletoe (*Phoradendron flavescens* Nutt) belongs to the family *Loranthaceae* (mistletoe family), and is a parasitic plant on the branches of certain trees, from which it obtains a living from their sap. It sometimes kills the branch or even the tree on which it is a parasite. It occurs as an evergreen, glabrous, pendent bush, from one to four feet long, sometimes in large dense clusters, with its fiber roots insinuated into the wood of the tree upon which it preys. Its branches are stoutish and knotted, branching twos, or dichotomous, with thick and smooth, green, oval leaves, generally in pairs. The flowers are small, inconspicuous, and greenish-yellow in color. An abundance of pollen is obtained from these. The fruit is a small, white, viscid berry, the flesh portion of which is very mucilaginous. Birds fond of them will sometimes have them sticking to their bills, take them to other trees, where the berries with the seed are removed by rubbing them off on some branch to which they adhere, and new plants begin to grow. I have seen this pest on different species of oaks, elms, mesquite, hackberry, bois-d'arc, and other trees. It is most abundantly found on our shade trees here; the hackberry (*Celtis Mississippensis*), to which it is doing much damage. It is just as plentiful on the mesquite-trees (*Prosopis juliflora*), our leading honey-producer.

The photos (p. 110) show it on the mesquite-trees. It will be noticed how dwarfed the branches are upon which the largest quantity preys. This photo also shows two valuable honey-plants on one root-stem. Several of my apiaries are located where the mistletoe is plentiful, and I value it very highly. It is the earliest pollen-yielder, and such in large quantities, and stimulates early brood-rearing. I am not sure about its honey-yielding, but believe it gives some.

The mistletoe was deemed sacred by the Druids, and is still frequently employed in

Christmas festivities and sports. "Kissing under the mistletoe," according to Scandinavian mythology, is given as follows by Braver:

"The wicked spirit Loki hated Balder, the favorite of the gods, and, making an arrow of mistletoe, gave it to Hader, the god of darkness, and himself blind, to test. He shot the arrow and killed Balder. He was restored to life, and the mistletoe given to the goddess of Love to keep. Every one passing under it received a kiss as a proof that it was the emblem of love and not of death."



LOSS OF QUEENS WHEN MATING.

"Good morning, Mr. Doolittle. Got those bees in the cellar yet? The last you told us about them in GLEANINGS was that they were not in, and that they were out in four-teen inches of snow."

"Yes, I remember, Mr. Allen. But the snow went off a few days later; and we had a day in which they had a reasonably good flight soon after. This allowed me to get them in all dry and nice. It would have been a little better had the south wind not blown quite so hard, as this prevented their flying as freely as they otherwise would."

"Do you have much south wind here?"

"Lots of it during the winter, and especially every time when it becomes warm enough or nearly so for the bees to fly. This is one of the things against outdoor wintering here in Central New York. Nearly every time when the mercury goes from 45 to 55 degrees above zero we have a south wind which sweeps over the country at from 35 to 50 miles an hour; and if the bees attempt to fly they are blown down in the snow, mud, or slush, so that many of them perish, fully half or more with the mercury as low as 45 to 48."

"That makes it bad, surely. But I came down from Michigan to have a little talk with you about the loss of queens when they go out to mate. So far I have lost a large proportion of what I have raised in getting them fertilized. Can you tell me where my trouble lies?"

"Do you have any king-birds hanging or perching about your apiary?"

"Not that I know of. How does a king-bird look?"

"Do you know of a bird that they call a 'pee-wee,' a bird which builds its nest in some old out-building or about the barns, using moss and mud for the constructing material?"

"Yes, this bird which you describe is quite familiar to me."

"Well, a king-bird is a great big overgrown pee-wee, about three times as large as the pee-wee, or nearly as large as our robin; but in shape, color, and general make-up it looks and carries itself almost exactly like a pee-wee. But instead of building its nest about buildings, and using mud and moss in nest-construction, it usually builds in apple or other low-down trees, using fine grass or straw, mainly, for material."

"Yes, I know the bird now, and I did see one or two sitting on old dead branches of trees about the apiary during the summer."

"And did you notice that, every few minutes, or at times as many seconds, this bird would leave its perch in rapid flight, and in a moment return and appear to be pounding something which it held in its beak, against the old dead perch on which it sat or stood?"

"No. I do not think I noticed that part, for I did not observe close enough for that, as I was not interested in this bird or any other."

"Well, these birds are insectivorous, and thus it comes to pass that they often feed on the bee; and when you see one perched on some old dry tree near the apiary, going from and returning to the same every few moments or seconds, and pounding its beak against the old tree, you may rest assured that a bee perishes with every flight from the crag."

"What makes you think this?"

"I have a rifle with a telescope sight on it, the telescope being strong enough so I can see the toe-nails and whiskers of a squirrel ten rods away, and with this I can see what a bird has in its mouth at that distance."

"That is plain, I should say."

"Yes; and this telescope has told me that the king-bird catches bees, and lots of them, especially when a pair or more of them have nests near or about the apiary; and as this bird is one of the late comers in the spring it nests late, so that the time for feeding its young comes right in the time when most queens are taking their wedding-flight, or at about the time after-swarms is at its height, where natural swarming is allowed. One year there were three nests of these birds near the apiary, when I allowed natural swarming, and before I commenced the rearing of queens as a business, and that year I lost fully forty per cent of all queens from the parent colonies and after-swarms which were saved. I noticed that these birds were about the apiary very largely from one to three o'clock in the afternoon, and from this I conclude that drones and queens, in proportion to their numbers, are more often caught than worker bees. The next year I killed every king-bird as soon as I saw one perching about the apiary, and my loss of queens since then has been only a small per cent of what it was previous to thus killing all these birds which insisted in hanging around the apiary."

"Well, I will look after these birds in the future. But you do not think these birds cause *all* the loss of queens?"

"No, by no means. If your hives are close together, of the same color, and stand in a row side by side, so that all of them except the end ones look and appear alike, you will have trouble in the matter of losing queens at mating, no matter whether there are any birds around or not."

"How is this?"

"While bees mark their location on their first flight better than it would seem possible for them to do, yet if you observe only casually you will find that there is much mixing of bees when returning from their first flight, where hives are of the same color and set close together. Now, if it happens to be a worker bee or a drone which enters a hive other than its own, no harm comes from such an entrance; but if it happens to be a queen she is soon balled and killed, where the hive into which she enters has a good queen already. And in any event the hive from which she came will soon be beeless unless the bee-keeper finds out about this loss and gives them a new queen or some means of producing one."

"I see. But how is this to be remedied?"

"First and best by locating the apiary about buildings or scattering trees, so that no two hives shall be in a nearly like position as regards these trees or buildings, in which case the queens take these things as a sort of landmark, and by these know just which is their own hive, thus making no mistake when returning from their wedding-flights."

"But suppose one has no trees near or about where the bees are wished to stand."

"Then we must do the next best thing, which is, to locate our hives in such a position that no two of them appear the same from the outside."

"How can this be done?"

"By setting them in twos, threes, or fours about the beeyard, and having the entrances to each lot face in different directions; by painting each hive a different color, and by having a dissimilar object near the entrance of each hive."

"Which is *your* choice?"

"Where I could occupy all the ground I wish with any apiary I would locate the hives on the hexagonal plan, having the rows ten feet apart, and the hives ten feet apart in the row; and under no consideration would I have the hives closer than five feet apart each way; and I would have a few trees or buildings in and about such an apiary, if possible. If not possible, I would put something out in front of every other hive of a different nature from the other hives, thus giving every other hive a different appearance."

"How is this best done?"

"Lay a few flat stones down in front of the second hive from each end of the row, then skip a hive, and in front of the next one lay down a wide board or two, twice as long as the hive is wide; skip a hive again, and at the next put down more stone, and so on till all the apiary is gone over. Then, if you put in a few sunflower seeds near the entrance of every fourth hive, or allow some weeds to grow near the entrance of an oc-

casional hive throughout the apiary, or lean up a stick of wood right over the entrance to a part of the hives, you will have very little cause to complain from loss of queens when they go out to meet the drones. Occasionally a queen will get lost under the best of conditions; but since I kept the king-birds killed off that persisted in hanging about the apiary, and marked my hives as I have told you, I do not lose more than five queens out of a hundred, and not more than three out of a hundred, except in unusual years."

"Well, I feel very grateful for what you have told me, and I will be going now. Good by."



AVOID A PROUD AND BOASTFUL SPIRIT; EXCEPTIONS TO ALL RULES.

When we know a thing, it seems to be human nature to tell it to our friends. When we think we know a thing and don't, we tell everybody. This describes my nature exactly.

After studying the bee question a little I always liked to tell people just how my bees were going to act; just when they were going to swarm (usually they didn't swarm at all, but were just trying to supersede a queen). I liked to tell just how they would act when they swarmed; how they would circle in the air, and, on account of the queen being clipped, they would go back into the hive without clustering. Theoretically this was what they should do; but, friends, in this vicinity (I did not say "locality") I have had during the past five years about 25 swarms, and every mother's daughter of them, with one exception, clustered and stayed clustered till I got tired of waiting for them to come back, and till I shook them out of the tree. This one exception caused me some embarrassment.

One day a friend came over to talk bees with me. He was the kind of company I enjoy visiting with. He kept his mouth shut like a gentleman, and let me do all the talking. I told him how to stop a runaway swarm. All he had to do was to get ahead of them and throw water on them. I told him that one writer claimed he could drive a swarm anywhere he wished with a spray-pump. I did not try to get him to swallow such a big one till he got used to my little ones. But I hope that is so. What a fine ad. it would be for the bee business on the 4th of July to head the procession driving a swarm of bees before you!

I told my friend if he ever saw a runaway swarm to let me know and I would show

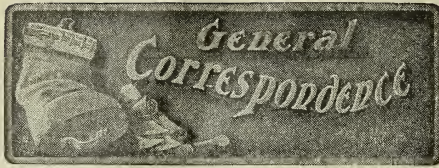
him how easy it was to stop them. It so happened that, about a week later, he came running over to my apiary, nearly out of breath, and said: "There is a whopping big swarm of bees about two blocks away, and they are coming right this way."

"How lucky!" I thought. Never was a more opportune time for a scientific demonstration. We quickly got pails of water and cups. Sure enough, here came the bees—a buzzing, humming mass that filled the air for nearly a square. It was a beautiful sight—one of which I never grow tired.

Before they got near the apiary we sprinkled them, and, presto! they immediately began to slow up and come nearer the ground. There, I told you so. See how easy we can make them come down! This is the modern way of doing things. Some old fogies still use tin pans, looking-glasses, etc. Nothing in such nonsense as that. This is real science. All this time the bees kept coming lower and lower. Now you just watch me and I will show you how I can make them cluster on that little peach-tree there. How fine to stop them right in an apiary where we have hives and every thing all ready for them! Then I got on the other side of the swarm and began to sprinkle them. All this time my friend kept exclaiming: "This is great! It's worth coming a long way to see! What will you take to teach me how?"

But why did not the bees cluster on that tree? Now a sickening suspicion began to come over my mind. The bees were gathering in a cloud around a hive. Yes, they were going in. Then the truth dawned upon me. It was one of my own swarms that I had hived the day before, and they were trying to abscond, and, not having their queen, they were returning as all good bees should. Oh my! Did mortal pride e'er before suffer such a slump? all that fine demonstration come to naught! all that classical bragging worse than wasted! I would gladly have sold myself for a penny, but I was too humble to cheat my worst enemy as badly as that. My friend looked at me with pity. The thought came to me that I might explain that, after all, it was due to the modern method of clipping the queen's wings that saved the swarm, but I did not have the heart to venture even this cheap apology.

Those bees were determined not to stay in that hive. I gave them ventilation all around. I shaded them. I gave them a double brood-chamber, but they simply would have none of it. Then I gave them a frame of brood to fool with, and they stayed under protest. Here is another exception to the orthodox teachings. That queen refused to lay a single egg for four days, and in the meantime the bees built the hive over half full of drone comb. I have had one or two other swarms do the same thing; and in using starters when they start with worker comb they usually leave a space in the corners that, later, they are sure to fill with drone comb. So my rule from this on will be, "Full sheets in the super; full sheets in the brood-chamber, at any and at all times."



THE DANZENBAKER HIVE.

A Demonstration of it at the Bee-keepers' Field Meeting at Jenkintown, Penn.,
June 26, 1906.

BY GRANT STANLEY.

With all respect to the inventor of the Aspinwall non-swarming hive, I can hardly make myself believe it will do all that is claimed for it in the hands of all bee-keepers and in all localities. Another thing, by the illustrations recently shown in GLEANINGS I am of the opinion it will prove rather complicated and too expensive. I can hardly believe we shall have a strictly non-swarming hive very soon unless it be at the expense of the honey crop, for the reason that it looks too much like getting rich by sitting down with our hands folded. Bee-keepers could farm out colonies by the thousand as easily as they control hundreds at present. Now, after all, what is wanted more than any thing else in this respect is a hive so constructed that it can be successfully manipulated and produce a profit to the bee-keeper in any locality; localities are so different that a successful manipulation of colonies applied to one locality will prove a failure in another, though possibly only a few miles apart, and *vice versa*. Then, too, as no two individuals are alike, the bee-keeper also comes up for consideration. We see two very successful bee-keepers, possibly in the same locality, employing entirely different systems. So I say what is wanted is a hive so constructed that it will readily permit of varied systems of manipulation, and produce satisfactory results to the bee-keeper; and if there is one hive possessing these features over another I believe it is the Danzenbaker.

This hive possesses more points of merit than any other hive on the market to-day. In fact, I have heard of only two objections to this hive, and they are these: That the handling of closed-end frames is too slow and tiresome, and kills too many bees, and that the closed ends are likely to be coated with propolis, and would have to be pried apart. To the former I would say that I believe closed-end frames can be handled even singly more rapidly than hanging frames, while they can also be handled in pairs or three or four at a time; in fact, it becomes a matter of handling hives instead of frames, and I believe this is what most bee-keepers desire. If a little smoke be blown over the closed ends on opening the hive, the bees will crowd to the center of the frames, and they can be handled without killing a single bee. Now

as to the latter objection, I live in a locality where propolis is sometimes very troublesome, though I have also had to pry hanging frames loose before I could handle them. Propolis is always worse with me during wet seasons; and as the fall weather with its cool nights approaches it hardens and becomes very brittle; but by this time I have no need to handle frames. But in case they must be handled at this time, if the frames are pried slightly with a screwdriver or like instrument they can be handled very readily.

This hive can be quickly adjusted to meet the needs of any size of colony. It is, in fact, a large or small hive just as wanted. If the main honey-flow comes from white clover, and it is desired to have a strong force of bees by this time, a second set of brood-frames can be placed on the hive during fruit-bloom, and by the beginning of white-clover bloom the hives will be fairly boiling over with bees, and the bees of this upper set of frames can then be shaken on the frames below, and the brood given to weaker colonies or used for making increase. This will furnish an immense force of bees for the sections. If the bee-keeper resides in a locality similar to that of "Alexander the Great," of York State, where the main flow comes on considerably later, the single brood-chamber will furnish plenty of bees in sufficient time for the harvest.

With this hive, bees will build all worker comb, and as straight as a board, even from an inch of foundation. You don't need to lift the frames out every day or two to see if the bees are building straight comb, as must be done with ordinary loose hanging frames. In case a colony persists in only half building down to the bottom-bar, the frames can be reversed, when the work will be completed in short order. Where the bee-keeper resorts to natural swarming for his increase, by placing a super of sections with starters on the hive at the time of hiving the swarm, the frames and sections will be drawn out together, as it seems that just enough bees work below to keep the queen engaged, and the rest of the bees work above in the sections.

This hive has been termed the "comb-honey hive;" but it is equally good for extracted honey. The producers of extracted honey want a frame narrower than the standard Langstroth, and rightly so, on account of the great weight in handling large frames of sealed honey and the risk of breaking in extracting. If I were an extracted-honey producer I should want my extracting-frames the same size as those used in the brood-chamber so that, if I wanted to use them for building up weak colonies with honey or making increase, they would be right at hand. There should be but one size of frame in the apiary. Of course, some will say they don't want any brood reared in the frames they run for extracted honey, as it will not be quite as clear; but "all is not gold that glitters;" and, after all, quality is the greatest essential that comes up in the production of honey.

This hive is also very well adapted to out-apiaries; and as bee-keeping by the establishment of such is becoming more of a specialty each year, it is worth while to give this matter more than a passing notice. The frames are always ready for moving, and can be carted anywhere with perfect safety. All that is necessary is to screen the entrance, fasten the roof and bottom-board, and the hive is ready.

In case the bees of a strong colony get ahead of the queen during the honey season, and fill the frames above the brood with honey, by reversing the frames at this time this honey will be carried up into the sections, as they will not tolerate any honey below the brood.

This is a very suitable hive indeed for making artificial increase by the use of nuclei, the frames being closed-end; and by the use of a division-board on each side of the frames it makes it a very warm hive, even in quite cool weather—a feature very essential in the rearing of good queens and building up these small colonies.

Brood-frames of this depth are about the limit at which combs built by bees from foundation starters will not stretch, sag, or buckle from the top-bar or bulge at the bottom. It is the limit at which bees build combs solid to the bottom-bar. Wiring is not necessary in the use of this frame. It is the limit that a queen will stay in the brood-chamber and not go up into the sections without the use of excluders. It is also the limit that insures having the pollen stored in the brood-frames and none in the section. It is the limit at which bees will build no brace-combs. My experience with brace-combs is not worth mentioning, as the very small amount I have had has been the fault of the queen and not the hive. The present tendency among many bee-keepers is for a frame somewhat shallower than the standard Langstroth, for the reason that they want very little honey stored in the brood-chamber during the honey-flow, as they want it in the sections, and this is overcome by the use of this frame, while with a deep frame there is always from one to two inches of honey stored above the brood next to the top-bars.

Another thing, as the brood extends clear up to the top-bars it is a very easy matter to examine a colony without removing a single frame. By blowing a little smoke over the frames the bees will run down out of the way, and you can tell just how many frames of sealed brood they have, and as to the presence of the queen. If present, drone brood can also be readily seen.

I have used this hive since 1900, and with this amount of experience and close observation I believe bees will winter better in this hive than in any other hive on the market. I wintered bees in these hives right alongside of chaff hives; and the bees in these hives always came out away ahead.

The chaff hive has seen its day. In wintering bees on summer stands, it requires several days of warm weather to warm up a chaff hive, and before this time has arrived the warm weather has passed without the

bees having had a flight; but with this hive, an hour or two of warm weather will warm it up sufficiently for the bees to fly. I have never had a case of spring dwindling or a queenless colony show up in spring; in fact, I have never lost a single colony in these hives with the exception of the winter of 1903, when so much loss in bees prevailed all over the country, and my loss was due entirely to starvation. There never will be a hive invented that will winter bees without food.

This is practically a double-walled hive. The frames being closed-end, there will be no currents of cold air passing up through between the frames, as is the case with loose hanging frames. Bees will build up in spring in this hive with amazing rapidity. I have never failed to have the hives fairly boiling over with bees at the approach of white-clover bloom, and this season I had honey sealed in the sections during apple-bloom. I believe it is the opinion of the majority of bee-keepers that bees will build up more rapidly in spring on closed-end frames. In the use of this hive, if the bee-keeper will see that his colonies are supplied with plenty of well-sealed stores at the approach of winter, there will be no need to "jockey" his bees in spring with daily applications of syrup to get them up for the honey-flow. When I read about this work in the journals I always imagine there must be something wrong. To tamper with bees daily in early spring results in more harm than good.

In preparing these hives for winter, lay two sticks, about the thickness of a lead-pencil, across the tops of the frames, so the bees can get from one frame to another without going around below; push several thicknesses of paper down between the outside frame and the hive, allowing it to extend several inches above the frames. Now put on an empty super; cover the frames with a porous quilt, and place a wheat-chaff cushion on top, and an outer case over all, and with plenty of well-sealed stores I would not give a great deal to have them insured. By this method of wintering in this hive I have not had a single moldy comb in spring. I allow a $\frac{3}{4}$ -inch entrance the width of the hive during winter, and $\frac{1}{2}$ during the honey season.

The adjustable bottom-board is another grand feature connected with this hive, as it permits of any size of entrance, from the smallest to the $\frac{1}{2}$ inch the full width of the hive. In case of robbing, the entrance can be reduced to such size in a few seconds as will insure protection.

In the production of fancy comb honey it is very necessary to have the maximum amount of honey stored in the sections in a minimum period. The faster this work is accomplished, the nicer the product. This is of the utmost importance in localities where the honey-flow is short. So you see that, by the use of this shallow frame, mostly occupied with brood, all honey is rushed into the sections; and with a strong colony it is surprising how rapidly the sections are drawn out and completed. My experience has been that bees will draw out and cap

these 4x5 sections much more rapidly than square ones. It is said bees are like people in this respect. We never see a square house, and, indeed, bee-keepers do not want a square bee-hive, as much better results are obtained with the present system. I have very few cells in finished sections that are not sealed, most of them all sealed, and built as straight as a board right down to the wood. Now, if all this is true in addition to being able to secure one or two cents more a pound for these sections, is it not a matter worth the consideration of every practical bee-keeper in the country?

Nisbet, Penn.

THE PLAIN LANGSTROTH FRAME— WITH A PRELUDE.

A Plea for Simplicity.

BY E. N. WOODWARD.

As we have been favored with so many articles on the merits and demerits of the Hoffman frame, I thought it no more than fair that the plain Langstroth frame with its simple construction and its easy manipulation should again have an advocate.

With this thought in mind I sat down to express my conviction on this old, wornout (always new) subject; but as I sat at my desk I opened the August 1st number of GLEANINGS, and, looking at the page at random, I said to myself, "Surely this must be some text-book illustrating some new mathematical problem, with its cubes and its squares, and right angles, triangles, parallels, etc.," but upon closer study I found that they were quite simple devices for handling hives, supers, and various things of that kind, and, to all appearance, very good in their way, and I wondered to myself what the inventive brain of the modern bee-keeper would place before us next, and whether we could afford all of this luxury, and make use of all the new things offered us, and make a paying investment of it.

Now, in this north-central half of Uncle Sam's bee-pasture, where we depend mostly upon white clover for our surplus, and often a failure at that, we must be a little careful how we indulge in these new things, on account of expense. One man may exploit a certain kind of hive (non-swarming), perhaps. It is something new, and has some good points, but is too complicated and expensive for practical use. Or some one may develop a new system of management so elaborate in detail that the thought of putting it in practice makes it appear almost prohibitive. It is easy for us to preach to others; but do we ourselves practice what we preach? In other words, do we take our own medicine? I rather suspect not in all cases, except in homeopathic doses.

In these new things that come up, how shall we determine what is truth and what is error? Sometimes we ourselves are at fault, and in trying to follow what may possibly be a truth we meet with disaster. As a case in point, I tried to follow the Alexan-

der method of strengthening weak colonies by placing them over strong hives, and it proved a complete failure. I shall not attempt it again until I am convinced that I was at fault myself. So I repeat, what we are all after is truth.

The teacher then should plainly show
That truth alone is uttered;
For man, to win success, should know
Which side his bread is buttered.

And now after drifting away for a time I wish to resume my subject and have a word to say in regard to the plain standard Langstroth frame. What we want is a hive and a frame and a system of management that will bring dollars and cents into our pockets. I am aware that this is not the popular side of the question. There are two extremes. One man will choose a tall hive with a deep frame, another man a shallow hive with shallow frames. Mr. R. C. Aikin, of Colorado, once said, "If bees were to consult their own wishes they would choose a hive thirty inches high." Is there not some point where the two extremes may meet—some happy medium where the wishes of the bee and the convenience of the bee-keeper may harmonize? We think that the compromise is about on the line with the standard Langstroth frame, pure and simple.

I have used the Hoffman frame quite extensively, and I find by experience that the objection to the plain frame is somewhat imaginary. It is the cheapest frame that can be made, and the easiest to handle. You can remove any frame you wish, often without the use of a smoker, and certainly without the disturbance and the annoyance and the stings that will come when we attempt to move the first Hoffman frame.

Now, "in this locality" attraction of gravitation is always in force. We set our hives perfectly level; and if frames are well made, and hung upon tin rabbets, they will hang true and plumb every day in the week. Again, at certain times of the year I wish to space my frames differently for a reason and a purpose which I think are very important. When running for extracted honey I space my frames in the super $1\frac{1}{2}$ inches. In wintering I space them $1\frac{1}{4}$ inches. If I wish to remove several frames from below and place them in the extracting super above, it is easily done. But some one will reply, "You can do all this with the Hoffman frame." So you can; but when you space the Hoffman frame differently you make a hanging frame of it—just what I advocate, and the so-called advantage of the Hoffman frame has lost its merit.

In regard to moving hives to out-apiaries, I will just say that I have moved hundreds of colonies on springs five miles and over, with no damage whatever, and I have moved them by the carload two hundred miles with the same good result.

In conclusion I will say that, for an all-purpose combination, for comb and extracted honey, the standard Langstroth hive and frame has no superior, and, like many other good things, will still rest upon its own merit.
Hillsdale, Mich.

FEEDING IN MIDWINTER.

How it Saved an Apiary; Some Interesting and Valuable Experiments; Good Candy as a Winter Food.

BY DR. D. E. LYON.

[As we were conducting some experiments in mid-winter feeding, we requested our "long-arm correspondent," Dr. Lyon, to conduct a similar series, adding we would pay him for any colonies that he might kill in the operation. The results that he gives here are very interesting as well as valuable, and we feel sure our readers will peruse it with unusual care.—ED.]

The purpose of this article is to give the results of some experiments made last year in winter feeding, and to offer suggestions concerning the method of feeding. The apiary fed was made up of 60 colonies, the result of artificial increase, the same having been built up from ten weak colonies, spring count.

The divisions were headed by young queens introduced at once at the time of division, by aid of tobacco smoke, and each small nucleus was allowed to shift for itself as far as feeding was concerned.

The season was a fair one, and by Sept. 10th each of the 60 nuclei had built up to a fairly strong colony with full sets of comb which they had drawn from full sheets of foundation, but with less than 10 lbs. of honey to the colony.

Feeders of the Miller type were filled with about 25 lbs. of good thick syrup, and each colony took up about this amount.

By the way, the writer had the Root Co. make his feeders to order, and I am convinced that the slight change was a big improvement. The feeders were made of $\frac{3}{4}$ -inch wood, so that they would not warp; and the outside divisions were such that the feeder fitted flush with the outside of the hive all around. When placed on the hive it looked exactly like a shallow super, and over it the hive-lid was placed, which could be slid from

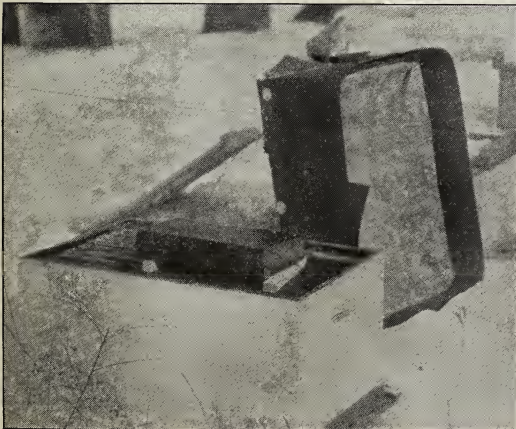


Fig. 2.—Hard candy in position with the prepared super ready to set down over the hive.

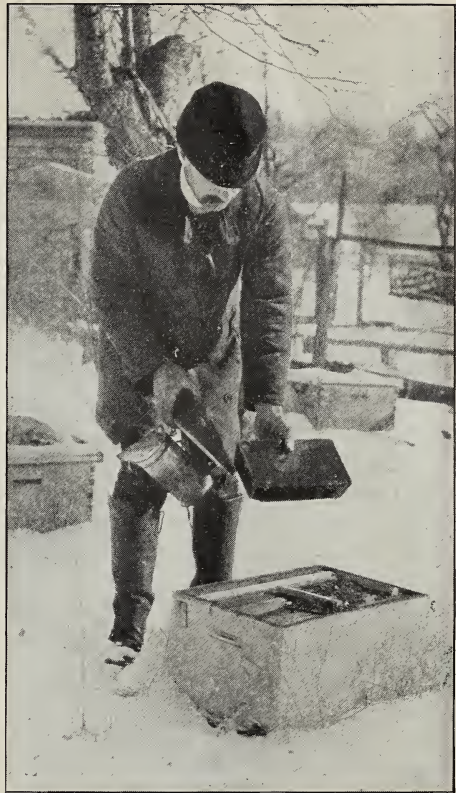


Fig. 1.—Placing the cake of hard candy over the frames.

one side to the other without the escape of a bee or of a bee falling into the syrup.

Feeding was over in a few days, and bees fixed for the fall and winter, and the outlook was favorable for bees going over till spring. The writer was called away for several weeks on a lecturing-tour, and did not have a chance to see the bees until the middle of December.

The fall months were very warm, the bees very active thereby, and, in consequence of warmth and activity, consumed all the syrup that had been fed them, and thus on December 23d, as I examined the hives by lifting the ends I was alarmed to find that not a colony had more than 3 to 5 lbs. of stores, and the most of the winter before them.

To feed syrup in a wholesale manner was entirely out of the question, as I tried it on a few colonies and found the weather too cold for the bees to take it, and I was confronted by the possible loss of my entire apiary unless some plan could be devised to feed them.

COLONIES FED IN WINTER WITH HARD CANDY.

As an experiment, ten colonies were fed each a cake of hard candy, made



Fig. 3.—Hives protected by supers of shavings on which are tacked strips of building-paper wide enough to extend down nearly to the bottom-boards.

by boiling two parts sugar with one part of honey until the same was brittle, and, when poured into bread-pans, these cakes hardened like so many blocks of ice. These blocks, weighing about 10 lbs. each, were placed one over the frames of each of the ten colonies, the cake of honey candy being placed on two strips of wood to elevate it about $\frac{1}{2}$ inch above the top of the frames—see Fig. 1.

Then supers were taken, Fig. 2, and pieces of burlap nailed over them so that, when these supers were placed over the cake of candy, the burlap had been left so loose and “baggy” that it covered the candy and at the same time permitted the super to rest flat upon the hive-body.

The super was then filled with planer shavings, the lid put on, and, to protect from wind and cold, I nailed a wide strip of “rubberoid” paper on the top of the super so that it lapped the hive-body as seen in Fig. 3.

As a matter of fact, the same method of packing was employed with all the hives, and was a perfect protection in every sense of the word.

A few more colonies were given cakes of hard brittle candy made by boiling plain granulated sugar and water, and poured into baking-pans to cool and harden.

HOW TO MAKE AND FEED GOOD CANDY.

I was not willing to risk too many colonies in experimenting, so the larger number of colonies were given great balls of “Good” candy, made by mixing extracted honey with pulverized sugar, and a cake about the size of a man’s head was placed right on top of the frames, and the super packing, as above described, placed over each.

I can assure the readers of GLEANINGS that it was no easy job to roll up my sleeves and



Fig. 4.—Mixing honey and pulverized sugar to make Good candy.

knead up several hundred pounds of honey and sugar, so I did most of it by proxy (Figs. 4, 5, 6), and each of these cakes was molded on a bread-making board, and rolled in pulverized sugar until quite stiff. It was an awful job in December, but it was either this or lose the apiary; and of the two evils I choose the lesser.

RESULTS.

After the colonies were fed (remember this was the last of December, with snow on the ground, as the illustration shows), I left them, intending to open a couple of colonies in a few days to see how they were making out, especially those fed the "hard" candy made from sugar and honey. About two weeks after feeding, I returned home from a trip; and when I went out into the apiary I noticed that something was radically wrong with the bees that had been fed the honey and sugar blocks—that is, the blocks made from boiling honey and sugar. Out of each of these colonies ran a stream of sticky half-melted candy, and in front of each of the hives were hundreds of dead sticky bees; and on opening the hives I found that the heat from the cluster had caused the block of candy to soften and run, the honey in it making it sure to do so, and thus those ten colonies were lost, Figs. 7 and 8.

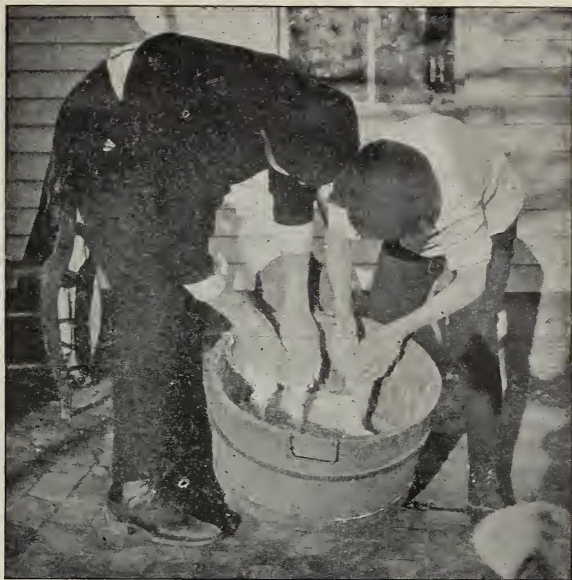


Fig. 5.—Adding enough pulverized sugar to make a stiff dough

The lesson I learned from this was that it was a bad thing to mix the honey with the boiling syrup for feed, for the colonies that were fed the hard candy made from granulated sugar alone with water were doing nicely, and came through to spring in prime condition.

The colonies that were fed the big balls of Good candy, made by mixing pulverized sugar and extracted honey, all did well, and demonstrated, to my satisfaction at least, that for feeding in winter nothing could equal it.

Along the last of February it became necessary to give each of these colonies another lump of about 5 lbs., which carried them over till fruit-bloom, and each of them built up well with the coming of the early blossoms. I would frequently go out among the bees in January and February and thrust my hand down through the shavings and feel how large the lump was, and thus I knew when to give another, which I did the last of February.

Care must be taken to pack the bees good and warm after giving the Good candy; and if this is done a hive can be opened in the dead of winter and the feed put in, if it is quickly closed and packed according to the above directions.

There is no reason why any colonies should be lost when discovered short of stores in freezing weather, if the above directions are carried out. The shortage of stores was explained: and had the writer not been away all the fall, the syrup would again have been fed; but as it was, the midwinter feed saved the apiary.

Rye, N. Y.

[For several years back we have been

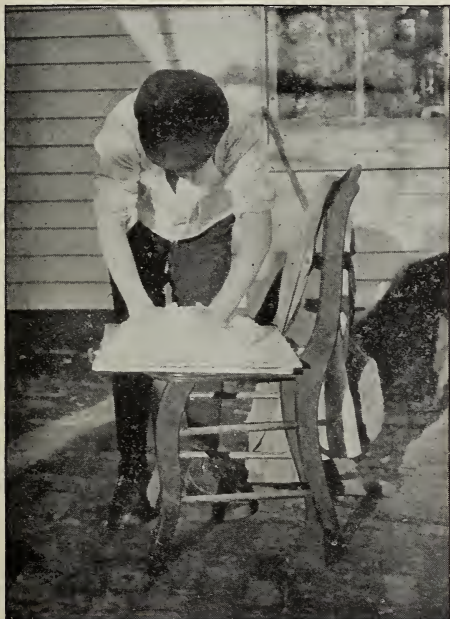


Fig. 6.—Kneading the Good candy on a bread-making board.

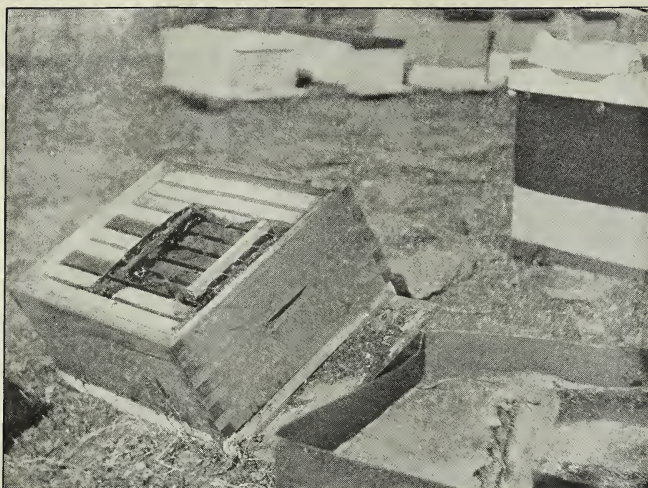


Fig. 7.—Showing how the cakes of hard candy containing honey melted and killed the bees,

having a good many inquiries as to what and how to feed colonies during winter in cellar and outdoors, packed in chaff. Our answer has always been, give to all such, frames of sealed stores—nothing better, and nothing else anywhere near so convenient. Whenever practicable it is our practice to lay aside a lot of these when honey comes in in the season, and set them aside for emergency purposes for winter use. But when such combs are not available—or when, for any reason, the bee-keeper has not provided them in advance—he must give them something else.

One *can* feed sugar syrup in the cellar, and the bees will take it down just the same as they would outdoors. What, then, is the objection? It stirs outdoor bees up to activity, breaks up the winter-nest, and, in the case of cellared bees, starts an uproar that excites all the other bees to a greater or less extent in the cellar, whether so fed or not. The only thing, then, is to give them candy in some form—some sort of food that they can appropriate *very slowly*. For this purpose we have advised giving lumps of Good candy made by mixing powdered sugar and honey into a stiff dough; and it would seem, in view of the report of Dr. Lyon, that we were

not far wrong. Our own experiments have likewise shown that food so prepared will carry colonies through the winter in good condition; although it must be clearly understood that there is nothing that is quite equal to a natural winter-nest, with sealed stores of honey or syrup immediately around and bordering that nest. Especially is this true for colonies wintered outdoors.

But some one, some little time ago, complained that the powdered-sugar candy would dry up, and that the granules would drop down between the

frames and be wasted; that at other times these granules would be carried out of the entrance, because without water the bees would be unable to convert them into food.

Last winter we went to work making various kinds of candy—some with varying percentages of granulated sugar and honey; another with pure sugar and water, and the Good candy, to which reference has already been made. We consulted various candy-men, who suggested that glucose would make a more suitable candy; but knowing the often dangerous sulphites in that article, and not desiring to encourage the use of it by any bee-keeper for any purpose, we did not use any of it. Our candy-men then suggest-

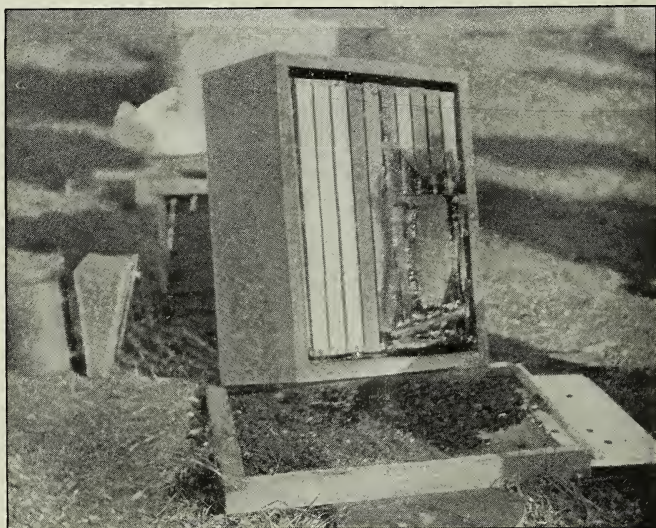


Fig. 8.—Cakes of hard candy containing honey not suitable. Bees on bottom-board drowned.

ed the use of honey, saying it would make a candy that would be moist and always available to the bees. We made several lots, as explained, with varying percentages of honey, and felt sure we had struck something good. In the mean time we requested Dr. Lyon to test the same proposition. We also made other lots of candy with dry sugar and water. These several kinds of food we gave to the bees in the cellar. What was the result? The candy that had been subjected to heat containing honey seemed to give any thing but favorable results. For some reason it seemed to excite the bees. Why this should be so when honey was a constituent in the Good candy we could not understand unless the cooking had the effect of making the honey into a sort of caramel—a substance that is always harmful to bees. As Dr. Lyon explains, this cooked-honey candy was very sticky, and ran down among the bees—and, such a mess! The bees looked discouraged, and were about ready to throw up the sponge.

How about the dry candy, using only water? This worked very nicely. It seemed so brittle and hard that it did not appear that the bees would be able to use any of it; but in its crystal state they would use it when they would not apparently touch the dry granules of sugar that dropped down on the bottom-board.

Now, while this hard dry rock candy is all right, it is a rather nice trick to make it. If you overcook the mixture of water and sugar you will spoil it. If you do not cook it enough, the result is just as bad. It should be cooked so that it will "grain" readily when stirred.

But I suspect that the average bee-keeper had better be content to make up the Good candy. In doing this he should not use *confectioners'*, but *powdered* sugar. The former is apt to contain starch. He should then mix this with the best extracted honey he has, in a warm room, kneading it until he has a lump of hard stiff dough. He should allow this to stand three or four days. In all probability the dough will begin to "run" and become sticky. He can overcome this by mixing in a little more powdered sugar, kneading it again until he has a nice stiff ball, which will hold its stability. This may now be given to the bees, in suitable-sized lumps on top of the frames.

For outdoor colonies the candy should of course be protected with packing material, and the whole covered with a super or deep cover. Building-paper will answer excellently for the purpose if put over the super.

I might state that Dr. Lyon and ourselves, in testing the value of this honey-and-sugar candy that had been cooked, and then made into bricks, sacrificed something like twenty colonies of bees. He killed something like ten, and we lost an equal number. How many more we actually injured in the cellar, not so fed, we can not say. While only a few colonies were given this hard honey candy, yet the excitement caused among those few affected more or less all the others not supplied with this food.—ED.]

VENTILATING OUR BEE-CELLARS.

Too Much and Too Little: how Not to Ventilate.

BY E. W. ALEXANDER.

There are but few things connected with the wintering of our bees that elicit such a difference of opinion as the ventilating of our bee-cellars. While it is true that bees have been and are frequently wintered in cellars that have little or no ventilation, it is also true that, in these, we usually find the combs badly molded, honey thin and watery, and the bees somewhat affected with dysentery, and far from a healthy condition when taken out. Certainly it is contrary to natural law to confine our bees under ground five months or more, compelling them to breathe the same air over and over thousands of times, and then expect them to remain in a healthy condition so as to stand the ever changeable weather of our spring season.

In order to have my ideas well understood on this ventilating subject, Figs. 1 and 2 show the building we made over our bee-cellar last fall. In constructing this building we had several objects in view. First, and one of the most important, was to give the cellar *proper ventilation*; next, to give us a large room above to do our extracting in, and store our surplus hives of extracting-combs and many other things connected with the business. Then we wanted a tank-room where we could have our honey-tanks so arranged that, in a moment, we could turn the honey directly from the extractor into either tank; then we wanted a shop where we could make hives and do all kinds of odd jobs, such as making beeswax into comb foundation, grafting larvae for queen-cells, which should always be done in a warm room, and, lastly, plenty of room to store a large crop of honey in until sold.

First, I will describe the building, which is 24 feet wide and 56 long. The longest way is north and south. The cellar occupies 24 × 40 feet of the ground floor at the north end; then the tank-room occupies 16 × 24 feet of the south end, and its floor is on the same level with the cellar floor. This room has four doors in it—one wide door opening into the south end of the cellar; also one wide outside door in the south end of the building where we roll out the barrels of honey into the wagon when we ship. Then we have a door on each side of this room, which comes very handy to carry bees in and out of the cellar from the lower part of the bee-yard by putting screens on these two doors; and by leaving them open we get a fine current of air through the tank-room, which has much to do with ripening and thickening the honey. The cellar also has an outside door at the northeast corner, where the greater number of colonies are carried in and out. The shop part is on the upper floor, which is level with the floor of the extracting-room, and is 16 × 24 feet.

This extracting-room or store-room is 24 × 40 feet; and directly over the cellar in the

floor of it we have four trap-doors about 10 feet apart, in size $2 \times 2\frac{1}{2}$ feet, directly over the bees. These we can easily open to any size of hole from a little crack to the whole space, $2 \times 2\frac{1}{2}$ feet, which allows all impure air to pass off into the large room above. We can also put a quilt in the place of the large door at the south end of the cellar, which gives fine ventilation into the tank-room and up the stairway into the shop, and up a garret. We have two pipe-holes in the chimney, one of which is always open, and makes a strong current of all foul air out of the building. This steady and gradual ventilation of the cellar into these two large rooms, one at the end and the other directly over the cellar, keeps the air as fresh and healthy where the bees are as it is outdoors.

With this way of ventilating the cellar it is never necessary to open any outside doors, letting in cool fresh air, which will arouse a whole cellar of bees to the extent that they never again become quiet, and form themselves into a nice compact cluster, as they should to go through the latter part of the winter without loss.

We were surprised last spring to see how few bees wasted away while they were confined in the cellar. The average loss was less than $\frac{1}{2}$ pint to the colony, and that with a confinement of over five months. Every additional year's experience in wintering a large number of colonies convinces me more

and more of the vital importance of giving them a pure healthy atmosphere during these long northern winters.

I often think that, if those who have gone to much expense building bee-cellars, and putting in ventilating-pipes conveying the air directly from outdoors in among their bees had only realized how much better it would have been to have had this air first tempered, as it were, by being a short time in an adjoining room, they would soon have changed their ideas in regard to ventilation. But here is the rock that shattered their faith in ventilation. When they saw this current of ever changing temperature from outside kept their bees restless and uneasy they went to the other extreme and closed up all ventilators in disgust, and have ever since been prejudiced against ventilating their bee-cellars.

This is one of the questions we bee-keepers have studied on for many years; and it does seem strange that it took us so long to see the great difference in results when our bees were ventilated by giving them fresh air directly from the outside or from adjoining rooms. The first has almost invariably done far more harm than good, while the second has given us the very best results we could possibly ask for, keeping our bees quiet and contented clear into the spring, so that it is not necessary to disturb them until the flow-ers are again ready for them to work on. I

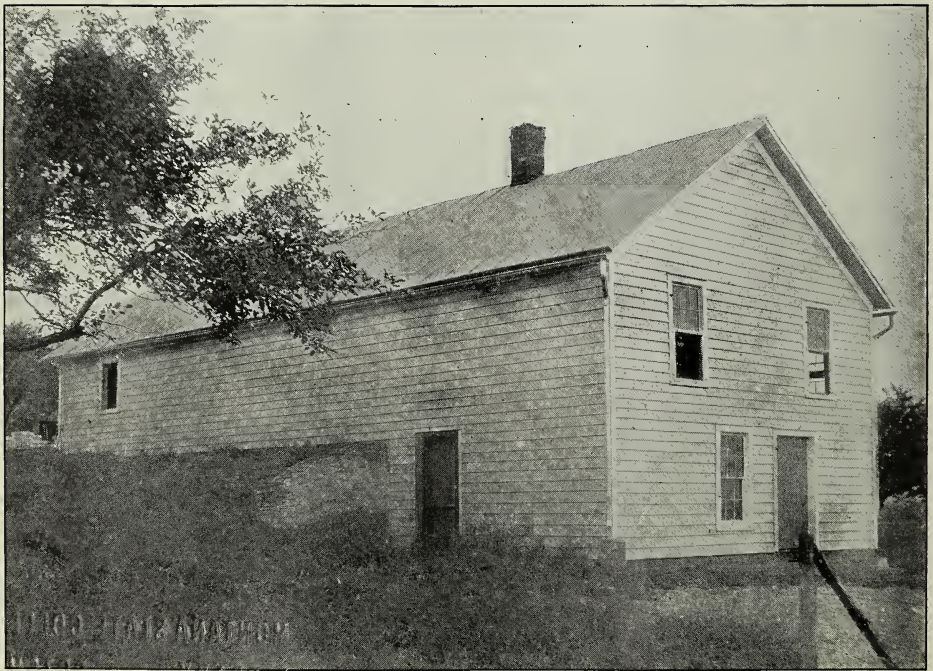


FIG. 1.—ALEXANDER'S HONEY-HOUSE; THIS CONTAINS THE EXTRACTING-ROOM, THE HONEY-STORAGE ROOM BELOW, ETC.; IT IS PROBABLY THE LARGEST BUILDING OF THE KIND IN THE WORLD.

sometimes think how much easier it would be if we could look ahead and shun these hard problems of life; but then it is much better as it is, for it is through their study that our perseverance is developed, and in this way we are ever passing to a higher and a more intellectual plane.

past the end or side of the cellar sufficient to hold a few thousand cubic feet of fresh air; then ventilate the cellar into these rooms, and you will have the whole wintering problem solved.

The accompanying photos of the sides and the south end of our building and cellar will



FIG. 2.—ALEXANDER'S HONEY-HOUSE, TAKEN FROM A DISTANCE, SHOWING A PART OF THE APIARY.

With the continually changing weather of last winter it would have been almost impossible for us to prevent a very heavy loss of bees had we depended on opening outside doors to ventilate or cool off our cellar; for every time this is done it excites and disturbs every colony.

There are many things to take into consideration in order to winter our bees successfully. Many neglect putting their bees in proper condition as they should, early in the fall. I think this should be done before Oct. 1. Every colony should have a good queen not over fifteen months old; also a good-sized colony of bees with at least 20 pounds of honey. This amount is sufficient if they are wintered in a good cellar, and you expect to do some feeding in the spring to stimulate early breeding, which is very essential in order to secure a surplus of early honey. But if you don't expect to feed any in the spring, then 30 pounds or more is better to carry them through to another season.

In the above I forgot to say that, during the winter, we close the inside blinds of all the windows in the room above the cellar, and the tank-room at the end. This makes these two rooms as dark as midnight, and with the trap-doors partially open, and the doorway into the tank-room covered with a light quilt, there is an even temperature of pure air at all times in the cellar, which keeps the bees as quiet as death, and with them it is like one long unchanging night from the day they are put away until they are carried out in the spring.

In conclusion let me advise you by all means, when you build your bee-cellar, not to stop until you have a good substantial building over it—one that will extend either

help you to understand how we have such easy control of the ventilation and temperature of this cellar. I wish every bee keeper in the land could have his bee-cellar, store-room, and shop, as convenient as we now have ours. It would save many colonies from winter losses, and much time in carrying needed supplies from one place to another.

Delanson, N. Y.

[Our correspondent, in what he says of this subject of ventilation, agrees with one of the best authorities on the subject in the United States. I refer to Mr. H. R. Boardman, of East Townsend, Ohio. He has the reputation of bringing his bees through the winter every year in good shape.—Ed.]

WAX-RENDERING.

A Brief History of Different Methods, Including the Use of Wax-presses; the Hatch-Gemmil Press and What Can be Expected from it.

BY H. H. ROOT.

Continued from last issue.

We will now take up the actual plan of working this form of press. Since there is no heat applied to the combs during the pressing, it is well to do the work in warm weather or in some room that can be kept warm by the heat of the stove used; for when the air is cold, or when the wind is blowing, the wax has a tendency to become chilled, and the work is hindered. In warm weather, or in a warm room there need be no chilling if the work is properly done. It would

be a good plan to have all the apparatus arranged in order—that is, have the press near the stove and a large can for holding the hot water and melted wax, after it

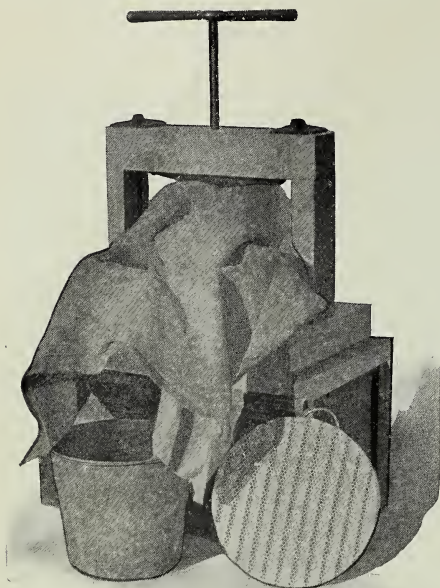


Fig. 5.—Showing can slid forward on the platform and the burlap spread out ready for the melted combs.

comes from the press, near both. An ordinary wash-boiler on a stove may be used for melting up the comb; or a faster work can be done if there are two such boilers—the second one to be used for heating fresh comb, while that which has already been melted in the first one is being rendered.

The press should stand as near the boiler as possible in order to avoid the drip when the melted comb is dipped from the boiler into the press. A cleat should be nailed each side of the press (Fig. 4) to keep it from twisting around out of place when the screw is turned down, and still allow it to be tipped up on edge when necessary, to let the wax and water drain out. It is best to have the back of the press a little higher than the front at all times.

To begin the work, pour about two pailfuls of water into the boiler and set it on the stove. As this comes to a boil, keep adding old comb, stirring frequently.

As much as half a barrel may be melted in one boiler at a time, or even more if necessary, but it is best not to have too much comb in proportion to the water used since this plan is essentially a washing-out process; and the best results, therefore, can not be secured when there is not enough water. Keep stirring the contents of the boiler until it has all been heated through thoroughly and has boiled until all the lumps have been reduced

and the melted comb is of the consistency of mush; then push the boiler to the edge of the stove so that the wax may not burn or become discolored from too high a temperature. Next put a wooden plug in the spout or tube at the bottom of the wax-press can; and after putting the folded-up burlap and follower in the can, fill it with hot water. This is to heat thoroughly the press and all the parts that would come in contact with the cheese, in order to prevent chilling. Then remove the wooden plug, draw off the water, and pour it into the second boiler on the stove, which, as before explained, should be used for melting up the second lot of comb in case it is necessary to do rapid work. Now slide the can forward on the platform, as shown in Fig. 5, and spread the piece of burlap over it. Dip about a gallon of melted comb and water into the press and fold the burlap neatly over it, Fig. 6. In doing this don't get the idea that a strainer or dipper with a wire-cloth bottom should be used, for the idea is to transfer *plenty of water with the comb* in order to keep the wax from chilling and also to aid in washing it out. Use an ordinary dipper, then, of pretty good size.

The square piece of burlap should be of such a size that there will be plenty of cloth on top to keep the slumgum from squashing out; but, on the other hand, there should not be so much as to make a great roll of useless cloth that will only be in the way. A foot on each side to fold over is enough. If this burlap cloth be folded over neatly, as one would fold paper in tying up a package,

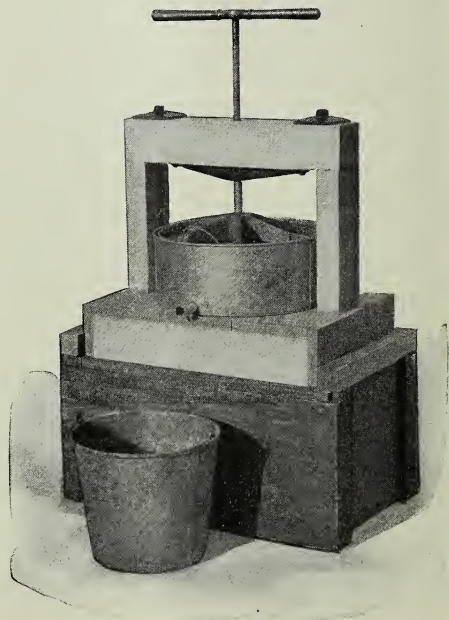


Fig. 6.—All ready for the pressure. No danger of breaking any thing.

there is no need of nails for pinning the edges together.* Place the cleated follower on top of the burlap, with the cleats running toward the spout, and then push the can back under

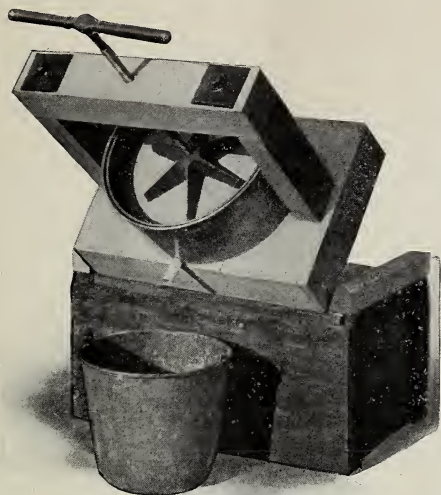


Fig. 7.—The press tipped up on edge to allow the last of the wax and water to drain out.

the screw. Apply the pressure slowly, turning the screw down more and more as the wax and water run out into the pail or can beneath. When but little runs out, it is best to tip the whole press up on edge as shown in Fig. 7, and keep it there for a few moments to allow all the wax and water to drain out. The screw should be turned down a little more, and then the press tipped up again. This is to be repeated until no more wax runs out, when the screw should be raised, the cleated follower lifted out, (see Fig. 8), and the cheese, which should not be more than $\frac{3}{4}$ of an inch thick, shaken up or doubled over on itself. The cleated follower is now replaced, and the pressure applied again. When no more wax or water will run out, the screw is raised, the follower set to one side, and the contents of the burlap shaken into a large box near by. This operation is gone through with until there is no more melted comb in the boiler, when work may be begun on the second boiler, the contents of which by this time will have come to a boil, and the first one may be filled with fresh comb and water.

The refuse from the press, which has been shaken out in the large box, is *not yet free from wax*, and I wish to make this point plainly understood. The results which I will give later along with many others not here mentioned show conclusively that one treat-

ment as above described will remove only from 88 to 92 per cent of the total amount of wax. The refuse will look perfectly clean and dry, and many will be deceived and throw it away, thinking it not worth a second melting; but from quite a good many samples that I have tested from different lots of refuse that have been sent in from other producers I am very sure that there is a waste of from eight to twelve per cent of the wax unless the refuse is run through again. For this reason, when a sufficient amount has accumulated it is well to put it back in one of the boilers and boil it again with water. The second treatment will take a little over half the time the first did; but the average bee-keeper can well afford to do it.

Since it is necessary to work rapidly and to keep the inside of the press exposed to the air as little as possible to keep it from getting cold, it may seem to many that this process is exceedingly slow and laborious; but a trial will show that such is not the case. I have been able, time after time, to raise the screw, remove the follower, double the cheese over on itself, and apply the pressure again, in only *ten seconds*. I will admit that I worked rather fast; but it is very easy to do all this in fifteen seconds. Or, the screw may be raised, the refuse shaken out, and a new lot of melted comb put in, and the pressure applied again in but thirty seconds. But if one does not wish to work quite so fast he can do it easily in forty seconds. Some producers, instead of putting the refuse back into a boiler and entirely remelting it after it has been through the press once, follow the

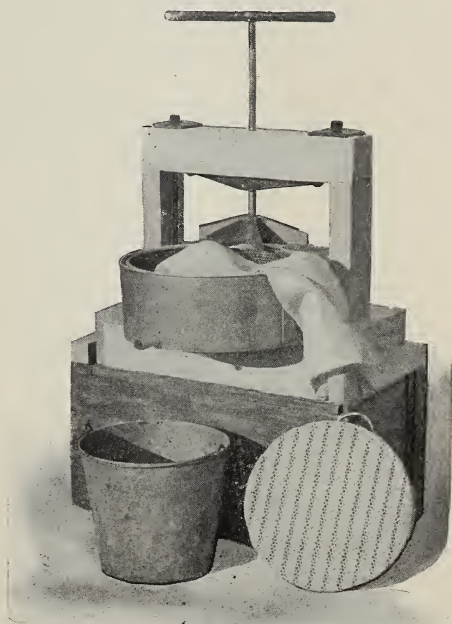


Fig. 8.—The screw raised and the cleated follower removed to allow the cheese to be shaken up.

* Instead of burlap, cheese-cloth has often been used, but in my opinion the wax and water do not run through it as readily, and it is not as strong, either. But the refuse shakes out of it much easier than out of burlap, and it might be well to use cheese-cloth inside of burlap. I have never tried this, however, and do not know that it would be satisfactory.

plan of pouring hot water slowly over the cheese until it swells up thick again, and then applying the pressure. I have tried this quite extensively, but I find that, even when it is repeated three times, there is still apt to be too much wax wasted; and since it takes less time actually to remelt it thoroughly, and the results by so doing are better, I prefer to follow that plan.

When it is remembered that beautiful yellow wax may be removed from old black combs at the rate of from 7 to 10 lbs. an hour, with a total loss of less than three or even two per cent, it will be seen that this is a rapid method. Furthermore, the diameter of the can which I used was only 15 inches. A larger one could be made at but little additional expense, and the output almost doubled.

Some will say that the plan requires a great amount of fuel and time, for heating so much water; but since the water can be used over and over again, instead of using fresh cold water each time, this fuel item does not amount to very much. The wax and water which come from the press are simply poured into a can or boiler having a spout at the bottom. The wax will rise to the top, and the hot water may be drawn from the bottom through the spout as needed. When the work is finished the water should be drawn off until but little remains, and then the wax run into shallow pails or molds to harden, previously soaped to prevent sticking, or left in the can, and taken out the next day in a large cake. When the wax is left in this way, the top of the can should be covered to keep the cake from cracking.

The results of a number of trials have been carefully recorded, and they are here given:

Lot.	Wax obtained at the first melting pressed in unheated press.	Wax obtained at the second melting pressed in unheated press.	Wax obtained at the third melting pressed repeatedly in German press.	Percentage left after one treatment with an unheated press.	Percentage left after two treatments with an unheated press.
1	33 lbs.	3 lbs.	14 oz.	10.5 per cent.	2.3 per cent.
2	13 lbs.	15 oz.	5 oz.	8.7 per cent.	2.1 per cent.
3	36 lbs.	3 lbs.	14 oz.	9.7 per cent.	2.1 per cent.
4	22½ lbs.	15 oz.	5 oz.	5.2 per cent.	1.2 per cent.

There are several interesting things to note in the above figures. First, let us look at the percentages of wax left in the refuse after one treatment in the unheated press, as given in the fifth column. The last percentage is much lower than the rest; but in this instance newer comb was used—that is, comb that had been in use but a short time, and, therefore, contained very few cocoons.

The other percentages in this column are truthful statements of the amount of wax that the ordinary producer wastes right along when he runs the melted comb through this form of press but once. It may be well to explain in this connection that these results are a characteristic few similar to many tests, made not only by myself but by several producers as well, who have sent slumgum here to be further tested.

The last column shows the percentages of loss after the melted comb had been treated

the second time—that is, after this second treatment there is only this much loss.

It might be well to add further, that, if the work be very carefully done, this final loss can be reduced to about one per cent. This I have carefully demonstrated; but I have preferred to give the higher percentages from other trials, as, in my opinion, they would more nearly equal the average results which would be obtained when no great amount of care is exercised.

In the second and fourth experiments chopped-up hay was mixed with the melted comb. This is a plan which has been advised, especially by German writers, the claim being that the cheese is thus made more porous, so that the wax runs out more easily. It will be noted that, in these experiments, a little cleaner work is done; but whether this would be the case right along I do not know; but it would seem to me that it would be a good plan to use the hay.

It will be seen that, after the second pressing in this unheated press, the refuse was further treated in a German wax-press to determine the amount of wax which ordinarily would have to be counted as waste. Some will want to know how we can be sure that this removed the last particle of wax that could be practicably obtained by any method. In answer to this I will explain that each lot of refuse was pressed for at least two hours in the German press, and was shaken up and pressed again repeatedly long after the wax had ceased to come from it. While there would be, of course, a very little wax left, even after that, yet it is perfectly safe to say that this amount would be only a small fraction of one per cent.

The most important advantage in using

the unheated press is that the first cost of the outfit is exceedingly small. In fact, it can be made or purchased at perhaps a fourth or a half the price of a steam or hot-water press. I have shown that this form of press can be so used as to yield at least 97 per cent of the total amount of wax. While better results can be obtained, we will, for the sake of argument, say that, with the unheated press, there is a loss of three per cent. If a bee-keeper, then, produces 300 lbs. of wax in a year, he will lose 9 lbs. of wax, or about \$2.50. We will grant for the moment that some form of a steam or hot-water press can be so used as to get 99 or, say, 100 per cent of that wax, thus leaving no waste. Now, supposing, I say, that this is true, it would take a bee-keeper, producing even 300 lbs. of wax, several years to get enough more wax to pay the difference in cost between an unheated press and a heated one. If the difference in

results between the two is only three per cent, I am sure that this fact is important: for if a bee-keeper can make or buy such a cheap outfit that will come so near doing as good work as the more expensive outfit, he will prefer it. I have shown that the wax from very old combs can be extracted in this unheated press at the rate of about 7 to 10 lbs. an hour, and, as I said before, leaving not over three per cent of waste, and in many cases not over two. Furthermore, the work is very easy, as it can be done out of doors if necessary instead of on top of a hot stove. Such a press can be made stronger, so that there is no danger of breakage.

Another important fact that must not be overlooked is that the quality of wax from this press is of the very best. The cakes need only a little scraping on the bottoms, when they are ready for market. The color is good, so that there is no need of refining the wax afterward. After having worked extensively with this unheated press, and in view of the results that have been obtained, I should rather use the method as described than any other plan that I have ever followed. The process of rendering wax from old combs requires a considerable amount of experience. I am well aware that some producers might not be able to do the work quickly and thoroughly at the same time, and that there might be a final loss of as much as 10 per cent. But, on the other hand, this trouble would be found, to a great extent, with any method of rendering that might be used. This fact, however, can not be overlooked: If good results can be obtained in one instance with this cheap unheated press, there is no reason in the world why they should not be obtained in another, providing the work be done in the same way. There is a wrong way of doing almost every thing, and there is no exception to this in the business of wax-rendering. With any method, the success depends almost as much upon the man as upon the press.

THE 1906 OBITUARY OF EMINENT BEE-KEEPERS.

BY W. K. MORRISON.

Early in the year Russia lost a bee-keeper with a world-wide reputation in the person of Ghennadj Kandratieff, born at Vrineschma, in the province of Kastroma, where his family were the hereditary proprietors of a large landed estate, his father being a noble and a veteran of the Napoleonic war when he served under that brilliant general Suvarrow, who so worried the great French leader by his strategy. Of course, young Kandratieff was early initiated in the art of war, and joined, as a subaltern officer, the regiment of the Grand Duchess Pavlovna, a unit of cuirassiers in the Russian army. Young though he was, he served with distinction in the defense of Sevastopol in the war with England, France, and Turkey. But he had no liking for the military art,

and was a passionate student of music; so as soon as the war was over he hastened to Italy to study, with intense eagerness, music in all its phases, for four years. On returning to Russia he made a splendid debut as a bass singer, and in a short time became general manager of the Imperial Theater in St. Petersburg. Thus far he had learned nothing about bee-keeping; but among his friends was Mr. Boutleroff, Professor of Chemistry in the Imperial University, who was a very enthusiastic bee-keeper, and who published a bee-paper, chiefly at his own expense.

He soon inoculated his friend Kandratieff with a desperate case of bee-fever which lasted a lifetime. The two friends went so far as to go to the extreme south of Russia, where they established large apiaries, which Kandratieff intended to give over to his son. It is to these men we owe our knowledge of the bees of the Caucasus, for it was under the shadow of these lofty peaks that their apiaries were established. But Prof. Boutleroff died, as did also Kandratieff's only son, so all hopes were dashed to the ground. But to relieve his mind he started a paper, *The Bee Messenger*, after a visit to the leading bee-keepers of Europe, in which he advocated the methods of Langstroth, as did his friend in Switzerland, Bertrand, whose book, the "Conduct of the Apiary," he translated into Russian. On the death of his daughter he suffered from sleeplessness; and, to while away the hours, he translated Langstroth's "Hive and Honey-bee," as revised by Dadant. He also published the unedited letters of Huber. In a word, he "reformed" the Russian method of bee-keeping. To the day of his death he was manager of the Theater Marie, in St. Petersburg, dying at the age of 72.

GLEANINGS has already mentioned the death of Dzierzon, the uncrowned king of apiculture, at the wonderful age of almost 96 years. His was a life of strenuous activity in behalf of bee-keeping, much of which work will endure for all time, or at least as long as men pursue the art of bee-keeping. To be the discoverer of parthenogenesis is glory enough for one bee-keeper. Americans owe Pastor Dzierzon a debt of gratitude for this, and, to a great extent, they owe to him the introduction of the Italian race of bees into this country, for it was he who discovered their superior qualities. He was the inventor of the system of bee-keeping founded on sound sense and scientific principles, and the work he did in this connection can not be measured by any known standard. Perhaps we can not give him any higher praise than this: He was the Langstroth of Europe, doing for Germany, Austria, Hungary, and the central states of Europe, the work assigned to his American colleague in the United States, Canada, West Indies, and Central and South America.

By the death of the Rev. Paul Schönfeldt the world of bee-keeping sustained a heavy loss, for his kind of genius was of a sort that is hard to find in any age or country. He was born in Silesia, Germany, in 1821, and

was, therefore, 85 years old when he died. He was trained for the ministry, which profession he followed for 42 years in one place. What started him as a master bee-keeper was the possession of a swarm of bees in a hollow log. This also started him as the most brilliant anatomist and physiologist of the honey-bee in the 19th century. He elucidated the mysteries of the honey-sac and stomach-mouth, showing how, by a simple valve arrangement, the bee was able to use the nectar for its own subsistence or to regurgitate it at will. He was the first to show us how chyle food is produced in the chyle-stomach. He also showed that royal jelly is simply an extra-rich variety of chyle food, and this was proved beyond peradventure by Von Planta's brilliant chemical analysis of chyle food and royal jelly. He further proved the food fed to drones is the same as to the larvæ. As a matter of fact, nearly all we know along this line we owe to Pastor Schönfeld, backed by the work of Dr. Von Planta on the chemistry of the hive. His work along this line will form a monument to Schönfeld which will last far longer than one of granite.

England lost an eminent bee-keeper in the person of John Marshall Hooker, who died January 31 at a ripe old age in the city of Philadelphia, where he had gone to live with his son, Dr. S. C. Hooker. Long ago he was associated with Cheshire, Abbott, and Cowan in building up the new bee-keeping in his native country on sound scientific principles. He was probably the first to use perforated zinc, as bee-keepers now know it, and is credited with the invention of "dummies." He invented an elaborate uncapping-machine at an early date. He was an aggressive and ceaseless advocate of all that makes for better bee-keeping in England.

England, unfortunately, lost during the year her patroness of bee-keeping, the Baroness Burdett-Coutts, who did a great deal to promote scientific bee-keeping in that country. For a generation she had steadily interested herself in the popularization of the new bee-keeping, being the patroness of the British Bee-keepers' Association. She was probably the wealthiest woman in the world, being chief owner of the famous Coutts bank in London. Her aim in assisting bee-keeping was to enable worthy people to gain an honest living. Another hobby was the promotion of goat-keeping among the poorer classes. She was born in 1814, April 21, and died December 30, being 92 years of age. She married a man much younger than herself, but retained her maiden name.

Luckily death has dealt rather leniently with the United States, and we have no long list to report. Mr. J. M. Hambaugh, whose name will be familiar to many readers of GLEANINGS, died in the early part of the year at Twin Valley, Cal. Most of our readers will remember him as the inventor of the foundation-roller, and also the foundation-fastener, which go by his name. At one time he was quite prominent in bee circles, being a director in the National Bee-keepers'

Association, and member of the Illinois legislature, where he introduced the foul-brood bill, and also the pure-food bill—two very worthy measures. He was a user of the Dabant hive. He removed from Illinois a few years ago to California for the benefit of his health. He was 60 years of age when he died.

Another prominent bee-keeper crossed the Jordan in the person of Mr. J. C. Acklin, of St. Paul, Minn., who died from a stroke of apoplexy on May 26. He was a quiet, unobtrusive sort of man who did a good deal to promote modern bee-keeping in the section of country of which St. Paul is the center.

On the 27th of January Mr. Ira Barber died at his home, Eddy, N. Y. He was celebrated for his success in wintering bees at a high temperature, and in this connection will be well remembered by the older members of GLEANINGS.

The old Bay State lost a valuable son in the person of James F. Wood, lecturer and demonstrator in apiculture at the Massachusetts Agricultural College at Amherst. He was a comparatively young man, and was born Jan. 11, 1862; but in a quiet manner, in connection with his college work, he did good work for several years in training young farmers in the art of bee-keeping.

Early in the year, there died at Flushing, New York, Samuel Parsons, a celebrated landscape architect and gardener who did a great service to American bee-keeping by personally bringing to this country the first consignment of Italian bees, which he turned over to his friend the late Rev. L. L. Langstroth, who, in turn, carried them to the apiary of W. W. Cary & Sons, Colerain, Mass., where they were propagated for sale and distributed over this country. Mr. Parsons had a long and useful career as a landscapist, nurseryman, and introducer of new plants. He was one of the solid citizens of Flushing, and owner of the oldest American nursery.

THE STATE OF THE MARKET.

The Result of the Comb-honey Canards.

BY CHARLES BENDER.

There is so much being said about the "comb-honey lies" that I feel inclined to put in another word, though it may be only making a bad matter worse. I wish that I could always be candid enough to see things as they are, even when things are disagreeable and admit of no remedy. When I do get an idea that others seem to have missed, I always feel rather chasty, and want to explain. In the next issue of the paper some one will say that my notions are all foolishness, and then I feel better.

The whole scope of country east of the Mississippi River, at least that part of it north of Mason and Dixon's line, has always been used to rather strong-flavored honey until within the last few years. When so much honey began to be shipped in from the West, people who bought it had a faint sus-

picion that something was wrong, but perhaps they never thought of adulteration. They may have remarked that the honey "didn't taste right," and dropped the matter from their thoughts.

Take the case of a man who has always bought clover or buckwheat honey. He goes to the grocery for honey, and is given alfalfa, with no explanation of where it came from, and no hint of its being a new kind of honey. Though the flavor, to some tastes, may be just as good, it is so utterly different from what he expected, that he is disappointed. It tastes like sugar syrup to an easterner. Later on he sees some comb foundation, and hears a lengthy talk about how it helps the bees. Now give him the story about manufactured comb honey, and he will swallow it with delight. He is so proud of having eaten the "artificial honey," and of having seen the artificial comb, that no power on earth could convince him that it is not true. Now get into an argument with him, and in the course of it admit that bee-keepers do sometimes feed their bees. He's fixed, and will do all he can to fix his neighbors.

In speaking of comb foundation, most people who are not professional bee-men call it artificial comb, or bee-comb. At least one of our supply-dealers always bills it in shipping as "bee-comb in sheets." It may be necessary to bill it that way—that's beside the question. But what do the agents think who make out those bills? They are sure that I am buying artificial comb, and are quite ready to believe that I feed my bees to get it filled, if some one tells them so; or even to go a step further and believe that some people fill it by machinery and seal it over with a hot iron, or by "electricity." Just mention electricity and machinery, and you can get the average person to believe anything.

Now let us consider for a moment what we are going to do about it. I have taken it for granted that we all want to know the truth, even if we can't do any thing. If we are helpless we ought to know it, so that our strength and time will not be wasted in useless struggles. If there is a remedy we shall gain a great deal by studying the case with perfect candor.

In my own market these stories have not caused any great trouble. I sell mostly to people who have known me for years as a bee-man, and my own and adjoining counties take the greater part, so there is no trouble about the flavor. When I find a customer who is firmly convinced that there is bogus honey on the market I try to show him that *my* honey is all right any way. Very often that is all that can be done. If you try to prove that no such thing exists you are trying to prove a negative, which you know is all but impossible. A man tells me that the moon is a huge cheese, and that the dark spots are colonies of skippers. I may be certain that it is not the truth; but I couldn't prove it, to save me.

In regard to the men who live in sparsely settled localities, where a great deal of hon-

ey is produced, it is hardly possible for them to avoid shipping to the cities. But it will help a great deal if we will sell at home when we can, and ship only to markets where our particular flavor of honey is well known.

Newman, Ill.

[You are not unorthodox, Mr. Bender, for it is a fact that the importation of honey into an old locality, with a new and hitherto untested flavor, often causes a suspicion of adulteration, or, in the case of comb honey, manufactured. While it is true that the fact, that we have to feed bees at some seasons of the year, and use foundation in sections is liable to give rise to suspicion, yet the full truth ought to allay it in the mind of any candid person. The fact is, bee-keepers have nothing to conceal. They should be perfectly frank with their customers—invite them to come to their yards, show them the use of foundation, and how and why they feed their bees. And when they sell alfalfa in a strictly white-clover district they should explain the fact, stating that the honey is from the West, and has a slightly different flavor. The fact should be brought out that the flavors of honey vary just as much as the flavors of apples, peaches, or other fruit.

The question has been raised about feeding honey instead of sugar syrup; but even if we do this we incur the danger of spreading foul brood through the feed given. Secondly, when outsiders see us feed our bees it makes very little difference whether we feed honey or sugar. Any one who would be suspicious enough to regard the act as one involving dishonesty would jump to the conclusion at once that we were feeding glucose or some other abominable syrup or sugar. If we must feed, why not feed the cheapest and best? The whole truth is the bee-keeper's best defense.—Ed.]

THE USE OF QUEEN-EXCLUDERS.

Are the Slats as Wide as they Should Be?

BY G. C. GREINER.

Ever since I have made the production of extracted honey a part of my bee-keeping I have looked upon the queen-excluder as an instrument of untold agony and torture to the poor bees. At the same time, the advices in favor of them, coming from the pens of our most prominent bee-keepers, together with the advertisements and recommendations of our bee-supply manufacturers, have led me to follow suit and use them without giving the matter any special consideration. Accidentally my attention was called to this matter in such a way that I am now strongly convinced the common manufactured excluding zinc for this purpose, $\frac{1}{16}$ " is the cause of a greatly reduced honey-yield in every apiary where it is used.

In putting on extracting-supers I sometimes find it, for various reasons, convenient to place the empty outside shell on

the hive first and fill out with combs afterward. It happened while doing this, two years ago, that two colonies side by side, equally strong in bees, and apparently alike in every other respect, had excluders of different makes, one having perforations of the customary $\frac{1.65}{1000}$, and the other, as nearly as I can tell, $\frac{1.75}{1000}$ to $\frac{1.78}{1000}$ inch. When removing the honey-board a few minutes later to insert the combs I noticed that the excluder, which had the large openings, was black with bees, completely covering it, while the other had only a few scattering bees above it. The difference was so marked that I was greatly surprised, and induced to investigate a little closer. In looking down I noticed that occasionally a bee would wiggle and twist, trying to get through, and then give up in despair, and retreat. At other places a bee would put forth the same effort and succeed, working its way up in a seemingly exhausted condition. Again, I would see here and there a bee pass up without making any noticeable effort. I could not help wondering at this difference, and tried to explain to myself the cause of these conditions. At first I imagined that the size of the bees had something to do with the case, but found out later that the trouble was all in the excluder. On examining the same I found that the perforations varied from about $\frac{1.65}{1000}$ to $\frac{1.80}{1000}$ —a sufficient variation to account for the different actions of the bees.

During all my extracting experiences I always noticed that my colonies with those large excluders, of which I have quite a number, purchased many years ago, greatly outdid all others. I do not claim that this was entirely on account of the excluders, for I usually use these larger ones first, and starting in with my better colonies too; but could they (the excluders) not be accountable for the better showing in some degree?

Why do all the manufacturers make the perforations of their excluding zinc so very small—just large enough so that bees have to make an extra effort to pass through? It always seems to me like going upstairs and crawling through a hole the size of our body at the head of the stairs. Is it because they are afraid queens might cause trouble in our extracting-supers? There is little to fear in this direction with considerably larger openings. Why do queens so seldom start brood in our section-cases, although a case well supplied with bait-combs offers a tempting inducement? In my opinion, one reason may be assigned to the fact that section-cases of all patterns are practically queen-excluders, although the bee-passages range anywhere from $\frac{1}{4}$ to $\frac{5}{8}$ of an inch. The $\frac{1.65}{1000}$ excluders which I have used for many years had in all this time only once or twice, to my recollection, brood above them, and then only in single instances. But suppose a queen did occasionally stray away from her brood-nest below, and start a few little patches of brood above. Is that such a terrible affair that, to prevent it, we have to compel our bees to crowd themselves through these sharp-edged strainers, called excluders, thereby wearing

themselves out prematurely? It can not be otherwise; but what is our honey-yield enhanced in consequence thereof?

If a queen is found above, or if indications by way of started brood would lead us to suspect her there, it is the easiest thing in the world to readjust matters to normal or desired conditions. She is very apt to be on one of the combs containing brood; and if these are shaken off in front of the hive she will follow the bees as soon as they begin to travel toward the entrance, and enter her deserted home, and, in all probability, will remain there.

The reason why a queen will leave the brood-chamber may be on account of a somewhat crowded condition below. She may be looking for a better chance to gratify her maternal desires. But in most cases I think her departure is more accidental. In passing over the combs from one side to the other her passage may be so clogged with bees, or possibly brace or burr combs may be in her way, that an excluder-opening right above her may seem to her the easiest and nearest way of reaching her destination. Once above the excluder, and among the bees there, she would be just as liable to look among the extracting-combs for a chance to free herself from her overloaded condition as to hunt her way back through the excluder; and if she should find any combs adapted for brood-rearing it would be only natural for her to use them for that purpose.

I do not expect that all bee-keepers see things as I have here stated; but I should be greatly pleased if others would investigate this matter a little, and express themselves according to their findings.

La Salle, N. Y.

[The standard zinc of this country put out by most of the dealers in supplies is approximately $\frac{1.65}{1000}$ of an inch wide. The first zinc that was sold in the early 80's was $\frac{1.80}{1000}$ wide, but we received a good many reports that queens went through it. We reduced it down to $\frac{1.70}{1000}$, and still there were complaints about queens passing the metal. We finally reduced it to $\frac{1.65}{1000}$, and found that, with this size, only an occasional virgin would get through it. While this has generally given satisfaction, it is possible that producers have made too much of an occasional queen passing the metal, and not attached enough importance to freedom of passage for the workers. I am half inclined to think you are right. The manufacturers can just as easily make a wider perforation as one narrower. If $\frac{1.65}{1000}$ is too narrow, the dies, after the temper is drawn, could be filed a little wider to make up the requisite size.]

My own experiments made some 15 years ago showed that $\frac{1.70}{1000}$ let too many queens through; but this possibly may have been because of the strain of bees that we then had. I have made no experiments lately, and it is possible that the size of $\frac{1.65}{1000}$ to $\frac{1.68}{1000}$ is too small.

Strains of bees vary somewhat. Carniolans would probably be a little larger than

the average standard Italians, but only by a very small variation, probably $\frac{1}{1000}$ to $\frac{1}{1000}$ of an inch across the waist. It may be that our correspondent has a race that is a little larger than the average.

I might quote the late Capt. Hetherington who, some years ago, wrote us that he had been having considerable trouble about queens going through his perforated zinc. He had been using a metal with perforations about $\frac{1}{1000}$ wide, as I now recall. We sent him some with $\frac{1}{800}$, and with this he seemed very much pleased. He reported that his bees went through it with comparative freedom, and yet the perforations were small enough to exclude the majority of his queens.

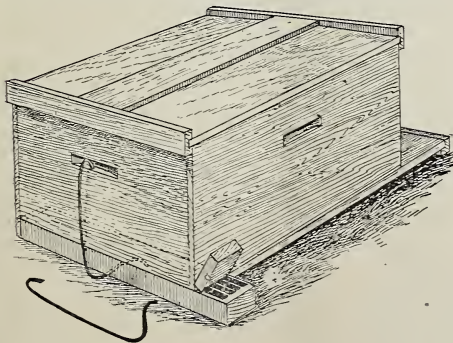
I should be glad to hear from extracted-honey producers from all over the country, using all strains of bees. If the standard metal now sold has perforations too small, let's know it—the sooner the better.—Ed.]



THE ALEXANDER FEEDER; A WIRE SPRING TO HOLD THEM TO THE HIVES.

We used the Alexander feeder last spring for the first time, and were a little puzzled at first as to how to fasten them to the hive. If blocked up with a piece of wood or a brick they are liable to settle and leave a crack for robbers and cold wind to enter. After studying the matter a little we hit upon the device shown in the accompanying illustration.

It is simply a piece of stiff wire bent in the shape shown, the upper end bent in a short



hook which catches into the hand-hold of the hive, or over the cleat, if cleats are used, and the proper length to go under the feeder when bent into the long curved hook as shown. It can be easily made from any old (or new) stiff wire with a pair of pliers; and if made of the proper length it will go on

with a spring, and holds the feeder with a spring pressure. It can also be easily bent or straightened to accommodate any little difference in different hives.

To fasten the covers on the feeders where they project from under the hives we drive a fine cement-coated nail of the proper length to project about $\frac{1}{4}$ inch through each side the cover near the outer edge, which nails are pushed into the feeder with the cover, and hold the same from blowing off.

After trying some without the nails, however, we find that they stay in place very well as the bees soon daub them more or less with propolis.

The same arrangement holds entrance-blocks on nicely too. Just drive a cement-coated nail through the blocks about 2 or 2 $\frac{1}{2}$ inches from the thin point, leaving the nail-points to reach through about $\frac{1}{4}$ inch or a little less, to be pushed into the alighting-board.

Denison, Iowa.

E. S. MILES.

[Your wire-spring arrangement for holding the Alexander feeder in place is most excellent. It is so simple in design, and cheap as well, that we do not doubt many of our readers will be glad to use it.—Ed.]

WILL A LARGE NUMBER OF BEE-STINGS CAUSE RHEUMATISM?

1. Last spring, being in a hurry, and the bees being cross, I received over thirty stings during the afternoon on the back of my right hand, since which time my right arm has shown severe rheumatic symptoms. Do bee-stings act on the homeopathic principle when received in large numbers? I am always indifferent to stings, and can not account for the rheumatic attack.

BEE-PARALYSIS AND MALARIA.

2. Have data ever been collected, in regions where bee-paralysis exists, as to whether that section is malarious? During the late 80's and early 90's chills and fever were very bad here; so was bee-paralysis. Both disappeared together. May both bees and humans not have been "shaky" from the same source of water infection?

3. The bees disinfect combs. Why can't we? Would not 24 hours soaking in strong brine, and combs soaked fresh in clear water, bring the answer? I shall try it next season anyhow.

W. W. CASE.

Frenchtown, N. J.

[1. We never knew of a case before where a large number of stings induced rheumatism; but we have had a large number of reports where they had apparently the opposite effect—that is, cured the malady.

2. We have never seen it stated before, that bee-paralysis and malaria would come and go at the same time. We should be inclined to believe that in this case it was only an accidental coincidence. Perhaps some of our readers who have been troubled much with bee-paralysis could enlighten us.

3. Possibly, but we would not like to take the risk. Brine is only a mild germicide, and

it is doubtful if it would kill the microbes of European and American foul brood. A solution of some of the standard germicides would be better. A strong solution of carbolic acid might answer.—Ed.]

WHY IT IS EASY TO SELL THICK HONEY PUT UP IN GLASS.

I think I have hit on a good plan to sell extracted honey. I gave my bees plenty of room this year, making them three and four stories high, and left the honey in the hives until Sept. 10, when I extracted about 200 lbs. of thick well-ripened honey. Knowing that a great deal of honey had been put upon the market early in the season, which was not giving satisfaction, I filled a dozen quart glass fruit-jars with the extracted honey, and labeled them "2½ lbs. honey, pure and ripe," and put them on sale at our grocer's. In two days it was half sold. By tipping the jars the customer could see it was thick, and visions of hot biscuit and honey did the rest.

Sheldon, Mo.

C. A. BIRD.

CAUCASIANS AS SWARMERS; THE STATEMENT OF A RUSSIAN BEE-KEEPER.

The price lists of two breeders of Caucasian queens say that they are great swarmers. I notice your answer to Seward Steffy, page 889, 1906.

H. KIRKHAM.

Vladimer, Russia.

SWEET CLOVER; SHOULD BE GROWN IN FIELDS, AND NOT ALONG THE ROADSIDES; ITS VALUE AS A FERTILIZER.

Please don't go to the legislature to have sweet clover stricken off the class of noxious weeds, p. 989, so far as highways are concerned, for the highway belongs (generally) to the public, and looks better cleanly mowed



MISTLETOE OR MESQUITE-TREE; TWO HONEY-PLANTS IN ONE.

See Bee-keeping in the Southwest, on another page.

than with any thing that will grow 7 to 10 ft. high in a season, as sweet clover will. Let bee-keepers raise their sweet clover on their own land, like buckwheat, and not disfigure the highways with it. I have about six acres of sweet clover, not as thick as I wish, but I hope to see it better in the future, and I cut the sweet clover along the road by my place.

There may be States in which sweet clover is classed as a noxious weed, and so that it would be unlawful to raise it, even on our own land. If this is the case, it would not look well to advise raising it there. I have found that sweet clover is worth more for enriching the soil than it is for honey.

I dug a few potatoes yesterday where there was sweet clover last year, and found double the yield out of the same number of hills on the same soil. Where the sweet clover grew, there was no manure last year; and where the sweet clover was not, I had a coat of manure last season. Along the railroad and highways sweet clover does not last more than a few years. It will grow where no plant will, and then other plants take its place. I have in mind a spot where the soil was removed for an embankment—3 or 4 feet



MISTLETOE AS A PARASITE—VALUABLE FOR EARLY POLLEN.

See Bee-keeping in the Southwest, on another page.

of top soil, some one sowed sweet clover there, and after a few years of sweet clover other grasses have taken its place. The sweet clover produces the humus to bring about the result, and this spoils the soil for its own growth. A. CHAS. ARMSTRONG.

Warner, N. Y., Aug. 17.



And let fowl multiply in the earth.—GEN. 1:22.

So God created man in his own image; in the image of God created he him; male and female created he them; and God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it, and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.—GEN. 1:27, 28.

I don't suppose it ever occurred to you, friends, that there was a chapter in the Bible that particularly referred to the "chicken business;" but here we have it, and it is the very first chapter of all. Besides the verses I have quoted, there is mention in three other places in this chapter (six in all) of the feathered tribes; and, as you will notice, it was God's will and plan that poultry should "multiply," especially with man's assistance, for he is in particular to "have dominion over" them.

Most of you are aware that I have all my life had a leaning toward poultry. In fact, my first hobby, and almost the first money I ever earned, was with chickens. Well, my enthusiasm has been recently kindled by several things. One is that my daughter (Mrs. Arthur L. Boyden, or "Blue Eyes" of thirty years ago), with her two bright promising boys, has recently got a regular craze for chickens. The whole family, almost, talk of nothing else, and read nothing else; and it was a treat to me to look over with them the beautiful new books and periodicals now devoted entirely to poultry. These books and papers suggested making an experiment I have had in mind more or less all the past summer—viz., seeing what may be done in the way of

POULTRY-KEEPING ENTIRELY WITHOUT BUILDINGS OR STRUCTURES OF ANY KIND.

I object to buildings, because, without very great labor, they become sooner or later untidy and uninviting, and, almost in spite of you, harbor insects and disease-producing contagion. And while I think of it I do not know but that *humanity* as well as poultry would escape a lot of ills if it moved outdoors and *stayed* outdoors. I once had in mind coops and nests made so cheaply they could all be burned up once a year or oftener.

Well, about Dec. 1 I wrote my good friend Shumard here on our island to save every sitting hen for me till I got around about Dec. 15. A little later, when I began to reflect that my whole "enterprise" was going to depend on unreliable sitting hens I began to cast about for a cheap incubator that could be *made* to sit when the *owner* was ready. Of course this incubator was a departure from strict "nature;" but when I saw an incubator advertised that could be run outdoors right down on the *ground* I sent for it forthwith; and as it weighs only 10 lbs. I packed it in my trunk without trouble. I reached here Dec. 17, and found there was only one *sitting* hen on the island, and the family had been able to save only 41 eggs for my 50-egg incubator.

The weather had been exceedingly hot and dry (no rain of any account for months), and the hens simply *wouldn't* lay. I am told it is hard to get them to lay here in summer. The laying season in this climate is winter. The directions with the incubator said, "Set a hen if possible the day you start the incubator, and roll the eggs, cool them off, etc., just exactly (or as nearly as you can) as this sitting hen does it." That commended itself to me at once, and I "made haste" to get on good terms with that Brown Leghorn sitting hen. I doubt if any of the young men who first get an eye on a nice girl take more pains than I did. Now listen! I gave the hen 15 eggs, and the rest of the 41 to the incubator, adding eggs every day as they were laid until I had 51 in the machine. Well, when we came to test them, on the seventh day, there were *eighteen* of the 41 that had been "saved up" that were not fertile. *Every egg* that was taken from the nest as soon as laid, and put into the incubator, proved fertile. So much in favor of *fresh* eggs for hatching. Three of the eggs under the sitting hen were unfertile, so the fault was not with incubator or management. We dated the added eggs with pen and ink, and this helped me to find out that unfertile eggs can be detected as soon as the third day without waiting until the seventh, as given in the directions. It is true my old eyes are hardly sharp enough to see the "spider web" so early; but the sharp young eyes of the children (Flossie and Clara) were a great help in testing out rapidly. By the way, how many of our rural people use an egg-tester when setting hens? Why, it is just along the line of our recent "corn talks." We can "count our chickens before they are hatched"—at least in a measure, if we use our brains as God intended we should use them to have "dominion," etc. I ran across a tremendous illustration just now as follows:

Some years ago Mr. Shumard procured a choice male Plymouth Rock (as he supposed), gave him to a nice flock of hens, and his good wife started *ten* sitting hens with 15 eggs each. *Not a chicken* hatched from all those 150 eggs. The male was no good. Now, all this time, money, and disappointment could have been saved in just *three* days with the first hen that started to sit. We bee-folks

have "select tested *breeding* queen-bees," and, I suppose, of course, poultry advertisers have select tested male birds, and it is a pretty important matter too. Of course, I have a poultry-yard of my own, a small one, and in it I have five beautiful White Leghorn pullets and a rooster. One of the pullets has just commenced to lay, and I put her first egg in the incubator. The third day I found it fertile, so I feel sure my young rooster is "O. K."

In my "printed directions" I found this sentence: "The hens turn (or, rather, stir) their eggs from 12 to 15 times in 24 hours, and the nearer we approach the 'hen method' the better results we can expect."

This was so astounding I placed the sitting hen in her box tight up against the board partition in our cottage, so she was close to the head of my bed. She was as still as a mouse all the evening, and when I went to sleep about 10 P.M.; but toward midnight I woke up in affright. Was it really burglars? Then I remembered, "Turn and *stir*!" Well, I should think so! For about 15 minutes she hustled those eggs around and whacked them against the sides and ends of the box in a way that made me think she would break every one of them. I have heard talk about a sitting hen not getting exercise. This one had exercise, and her chicks had exercise too, even *before* they were hatched. After I had been asleep again for about an hour she had the whole program over again, and so on until morning. My afternoon nap was a little longer next day. Perhaps I should explain Mrs. Root is not here this winter. *She* might have objected to my "nature studies." I have had many instructions in my day, but never before, so far as I can remember, have I "sat at the feet" of a "sitting hen." I am speaking reverently.

Wonderful books by great authors have been written about incubation; but this feathered friend (and companion) of mine is in some respects *ahead of them all*. She is under "God's guiding hand." That wonderful thing we call instinct is almost if not quite unerring.

Just about Christmas time we had a week of the coldest weather known on this island. My poultry-yard is in a depression screened by bushes from the cold wind. The cold air settled in this depression, and I found thin ice on the pan of drinking-water one night.* Well, during this weather "biddy" stuck close to her eggs; but when we had a warm day again she took all of a half-hour noon-ing. She climbed up on the work-bench, flapped her wings, quarreled with the other pullets, and even with the lordly rooster, and gave her eggs a good cooling. I put out the lamp of the incubator and let it cool, just as she did with her eggs.

This locality commends itself to me for poultry for several reasons. No buildings or structures are needed. The soil is so porous and clean there is never any mud or standing water; and where it is scratched over so

much, not even the soles of your shoes are soiled when going about among your fowls. The offal from the fish that is almost always on hand gives a great abundance of animal food without cost. Fish can almost always be picked up along the beach that fowls will work at if chopped a little with a hatchet. Green food I furnish in my yard by burying rather more corn and wheat than they scratch out before it sprouts, and they enjoy digging up the sprouted grain fully as much as if they had gotten into your garden.

A year ago Mr. Shumard had about 200 laying hens; but eggs were low, and he had no way of sifting out and disposing of the "drones," so he sold off all but about thirty. These thirty now almost get their living without feed, so he is doing very well indeed with eggs at 35 cts. Of course, to make a business one would need a large number of such colonies, "egg-farm" fashion; and if fences should be needed they would be required only at intervals, from the Bay to the Gulf (twenty rods or less in some narrow places), making them close together or further apart, according to the size of the yards required. I have never yet found any insect enemies on the island, and I am strongly of the opinion that these pests could not well live when the fowls roost in the trees, and there are no houses and "chicken-coops" to harbor them. There are at present no coons or other "varmint" anywhere near us. Roosters crow, hens sing and cackle, more and louder than in any other region I ever visited. I have got some trap nests. I expect to give you shortly some accurate records of what laying hens will do here.

"AND HAVE DOMINION OVER THE FISH OF THE SEA."

When I commenced this Home paper I had intended to mention only "the fowl of the air" this time; but the events of this New Year's morning have reminded me of the fishes as well as the fowls. For almost two weeks our friends on the island have scanned the waters of the Bay for signs of fish in vain; and this morning when I said, "Well, Jesse, I suppose there are no signs of fish yet?" to my surprise there came a different answer.

"Yes, Mr. Root, there is fish this morning; and just as soon as we can get our breakfast we will be out after them."

Our morning Bible-reading was rather brief, and even God's blessing on the new day (and new year) was rather more hurried than usual. Breakfast over, all hands were at work hustling the nets into the boats. One of the best new nets was out by the Gulf; and while I was roasting some fish for my "biddies" in a little fire outdoors I saw Mr. S., Mr. and Mrs. McAuley, Clara, Flossie, and Florence, all rushing after the missing net. These nets cost a lot of money, and must be handled with care. When the nets were piled in order on the two boats, Jesse and Mr. McAuley started after a "school" that, to their trained eyes, was not more than half a mile away. Mr. S., Flossie, and I followed in a little row boat. Flossie is only thirteen, but I doubt if either of us grown men could

* Nowhere else on the island was any ice seen.

make the skiff skim the waves as she did. The two fishing-boats made a quick movement around the fish so as to encircle the school. This done they took a net of larger mesh and made another circle inside the outer one. Before this was accomplished, however, the great fishes, weighing 2 or 3 lbs. each, discovered they were caught and commenced a desperate and determined effort to jump over the net by springing up in the air. Many of them did get over; but when they found still another net right before them they evidently became exhausted and discouraged. The thrashing and splashing was beyond anything in the fishing line I had ever witnessed. After we had, by thrashing in the water, and stamping on the boat, scared them into the meshes of the net as much as possible, the two men began hauling in the nets. In less than half an hour we took over a ton of fish. The inside net, with larger mesh, takes the big ones, letting the small ones through, to be caught in the second outside net. These fish are nearly all mullets, that are purchased as soon as caught, by the "ice boat," at 1½ cts. per lb., live weight. Bluefish bring 3 cts. per lb., and "sheepshead" 2 cts. Of course, fishing is very good business when you can strike a school; but there are so many days (and even weeks) of waiting that the fisherman usually has some other occupation that he can work at meanwhile.

Poultry are very fond of fish; but I am told raw fish should not be fed to laying hens, or to chickens intended for table use, as too much of such food will give both a "fishy" flavor. When cooked or simply roasted whole on a fire outdoors, this objection is entirely removed, and it proves a very cheap and wholesome way of providing animal food.

right in my face, and I never enjoyed any thing more. I woke again and again, and drew in the delicious air, and thanked God for it. It seems as if I could stand any amount of "breeze" now. I want such a window at home. *Pure air* with a *push* to it is life.

Rapid City, Aug. 29.

A. I. R.

After my refreshing sleep I began to inquire for people who took GLEANINGS at Rapid City. Nobody seemed to know much about them, as the town is pretty well scattered over the prairie. Finally I went around to the groceries to see if they had any honey for sale. I found some that was not very nice-looking, in several places. None of the proprietors knew who it was that brought in the honey. Well, none of this honey was exactly up to date. It was put in sections evidently without separators, was left on the hive until it was travel-stained, and it was not nicely crated up at that. Finally at one grocery I saw some sections that were about as nice as any I ever saw anywhere. The proprietor said it was his impression it was brought in by a couple of young ladies who kept bees up on the side of the mountain. After considerable inquiry I found the place—a beautiful little cottage on the side-hill, with vines over the porch, and flowers and fruits all around. Of course, the ladies were glad to find one of the editors of their favorite journal had got away off among the Black Hills. Their apiary was only a small one, for they had just commenced; but every thing was in apple-pie order, just as you might know women-folks would have it any way. Finally I said, "Why, my good friends, how does it happen that you are the only people in this region who have up-to-date appliances, and are securing a crop of honey that would be a credit to the most advanced bee-keepers?"

The answer was something like this:

"Why, Mr. Root, we got interested in bees; and in looking over Montgomery Ward & Co.'s catalog we saw what they had to advertise for bee-keepers. We sent there and got our hives and sections, and then found out about you folks, and that is how we came to be bee-keepers."

After a very pleasant visit I went to a livery-stable and got a rig to go out into the country. By the way, Rapid City is where two great railroads are going to strike, coming in from the east. These railroads will make a short cut toward Chicago and other large cities, without going away around horseshoe fashion to Omaha. For fully ten miles I saw teams and scrapers and plows busily moving the dirt for the new railroads. My friends out in the country were keeping bees a good deal in the old-fashioned way. I found an old gentleman and his wife out under an apple-tree folding up sections and putting in foundation. The bees were rolling in the honey from alfalfa, and they were in a hurry to give them room to work; but their sections and appliances for doing the work were crude, and much behind the times. I attempted to explain to them a better way; but as they did not take GLEANINGS, and knew nothing about it, they were suspicious of a stranger. Perhaps they thought I had



TRAVELS IN SOUTH DAKOTA, CONTINUED.

When we reached Rapid City the hotel was full; but it was so late that I did not relish hunting up another one. So I asked them if they had not some kind of place they could give me *somewhere*. The landlord said there was a very small room that I could look at and see if it would suit me. I said it would do all right. Now, there was not very much style about that little room; but the bed was neat and clean, and the pillow was right on a level with a wide-open window. Here is what I wrote home to Mrs. Root about it:

Last night I was in an upper room of the hotel, and my pillow was so close to a window it was partly on the window-sill. I fastened the door a little open so the resinous breeze from the mountains blew strong

some patent right to sell, or that I was a runner for some particular firm. Here, too, I found trees loaded and breaking down with the most beautiful apples, dead ripe and ready to market. But they were short of help, and it was a question which was suffering more—the rosy-cheeked apples or the bees that were swarming because they had no place to put their honey. Some wide-awake boy or girl might have helped these old people to save a lot of money.

In the afternoon I went over to visit the Indian school, about two miles from Rapid City. As I had been having a buggy-ride of about twenty miles I thought I would enjoy a couple of miles on foot. When a little over half way I ran across a fellow with an Olds automobile that he could not make go. After I had explained to him that I had run a machine like the one he had, several thousand miles, he let me assist him. Pretty soon we had the machine going, and got up to the Indian school in fine style. Now, my visit happened to be the day before the school opened; and the fathers and mothers from all over that region round about were bringing in their boys and girls to school. Oh how I did enjoy looking into the faces of those rude but *good-looking* people! The boys and girls were, of course, dressed up in their best, and it was evident that the parents of many of them had scrimped to get their children in decent shape for school. They came in all sorts of vehicles, and they looked with wonder—such a look of surprised wonder, in fact, as is characteristic of the Indians. Even if they are savages or semi-savages, they are greatly curious to know about new-fangled things. The Indian boys and girls were exchanging *greetings* all around, even if they did not *shake hands* very much, meeting their old comrades after vacation. They were very anxious to be carried about in the automobile; and as my friend who owned it was employed in the institution he loaded on as many of the children as he could, and then gave them an automobile ride around the grounds. The sight of those Indian girls with their gay-colored ribbons flying around the campus in an automobile was a sight indeed. I was introduced to the officers of the institution as well as to the matrons who look after the physical comfort of these young sons and daughters of the forest; and I assure you that these Indian schools scattered all through the far West are doing God's work. I asked the superintendent whether they had much trouble from intemperance among their boys, for I noticed the saloons were running wide open at Rapid City. He said there was comparatively little. Once in a while they had one or two boys who made them trouble in this way. Why can't we have a law similar to the Tennessee law, forbidding saloons within four miles or more of an Indian school? I would have it forty miles instead of four, and four hundred would suit me still better. After you get out in the country the homes are far between. Sometimes it is two or three miles from one farmhouse to any other neighbor's; but Rapid City seems to be rap-

idly building up, and that is perhaps where it gets its name.

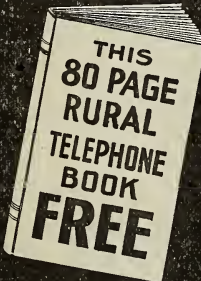
Now, I ought to have stayed longer in the Black Hills. Since coming back home I have received letters of protest from towns where I did not call, and I have felt sorry I did not stay longer. But I was not feeling very well, and traveling did not seem to be very conducive to an improvement of my special malady, so I took a hurried trip back to the town of Mitchell, located in the central part of the State. Mitchell, too, is growing, and I am specially interested there, as I have owned only a little way out of the city, for several years, half a square mile of land. As the years go by, the farmers are learning what crops are suitable for that locality. They are learning, also, how to handle the ground to better advantage. Mr. C. M. Peck, who has been for many years connected with the American Sunday-school Union, is now on a farm of his own, eight miles out of the city, and I think the whole family are enjoying farm life. They have a beautiful garden containing almost every thing that grows here in the East. Mrs. Peck has a great lot of chickens, some turkeys, some ducks, some guinea fowls, and last, but not least, some pet lambs. These lambs she calls her "bottle babies" for the reason they were brought up on a bottle. Something happened to their mothers, or they got under the weather, and would have died had she not fussed with them and brought them through. There is a little schoolhouse near their home, and it was my pleasure to attend and talk to a country Sunday school. The farmers of Dakota do not have as much trouble in disposing of their crops as they did some years ago. While I was there a man came, wanting some sheep and lambs. Friend Peck did not particularly want to spare them, but the man kept raising on his bid until Mr. Peck finally said he could have them. I think the sale included these same "bottle lambs." Now, I do not know much about sheep. I never had the sheep fever; but I drove the buggy while friend Peck and his boy drove the sheep eight miles into town, and I studied sheep quite a little while on that trip. They had a shepherd dog, but he was only a puppy, and had never been educated to drive sheep. Now, that shepherd puppy was a revelation to me. He was full of antics and mischief, like any other puppy; and when we started out friend Peck said he would be a lot of help if they could only make him understand what was wanted. We made several miles, however, before the puppy was of any use; in fact, he sometimes did more harm than good. He would jump over the sheep, get in among them, scatter them, and sometimes drive them off the wrong way. But friend Peck was patient with him, and kept explaining, etc. A man who has spent a great part of his life in organizing Sunday-schools ought to have patience with even a puppy. Well, after we had got about half way this puppy seemed to have caught on to what we were trying to do. It was intensely interesting to me to watch his looks and actions, and see

that he was actually learning to be helpful. When his master patted him on the head, and called him a good dog because he was really helping, his enthusiasm and delight knew no bounds. He would look at the sheep, then look up into his master's face and listen to his voice, and you could almost hear the puppy say, by actions if not by words, "Oh, yes! now I see. Now I understand what you are trying to do." He was so delighted with the work that, when the sheep were in their pen at their destination, he wanted to be of some use still.

We left the horse and buggy, and prepared to make some visits around town. Friend Peck said, "Now, I can not have that dog along everywhere we go, so I will put him in the seat to watch the buggy, and chain him fast so he can not get away." Before we got out of sight, however, the dog was hanging by his collar over the back end of

the buggy. He had hopped out to go with the crowd, and had not calculated on the chain. While hanging by the neck he could not very well bark or yelp, so he was in a perilous fix for sure. After this I shall always feel an affection for shepherd dogs that I never had before.

Now about the sheep. Friend Peck confided to me that he had not expected very much over \$100 for that little bunch of sheep; but when the check amounted to something over \$170 he declared he did not know of any better way of making money in South Dakota than raising sheep and lambs. By the way, it is so expensive moving bulky freight to market in the South Dakota regions that hay is often sold at a dollar a ton, and sometimes it will not even bring that. Now do you see why it is a good business raising sheep and cattle in that locality when prices are as good as they are now?



Rural Telephones

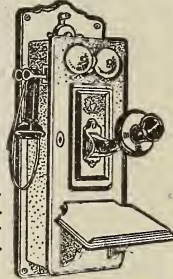
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—the best-working, easiest-running, longest-lasting, most reliable farm and garden tools. Designed by a practical farmer. Do the work quickly, right, without injury to plants.

No. 17 Planet Jr Single Wheel Hoe, Cultivator and Plow. One of the handiest implements ever made for gardening. One man easily does the work of three to six.

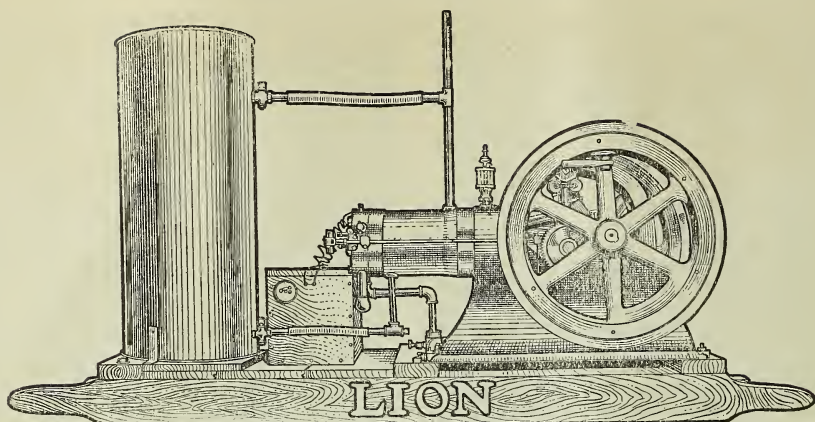
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FOR SALE.—Choice poultry. Ten leading varieties for the farmer or the fancier. Circulars free.
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FOR SALE.—M. B. turkeys. Hens, \$3.00 each; Toms, \$5.00 each; eggs in season, \$3.00 per dozen.
A. P. YOUNG, Cave City, Ky.

FOR SALE.—White Wyandotte cockerels. Good stock at a low price.
J. F. MOORE, Tiffin, O.

FOR SALE.—25 White Plymouth Rock cockerels, also pairs and trios. Eggs, \$3.00 per 15, \$5.00 for 30. *Fish-el strain*. Write your wants.
DR. C. L. VAN ORDOL, Dillsboro, Ind.

FOR SALE.—Rose Comb White Leghorns, cockerels and pullets, prize stock, scoring 90 to 94 in show-room. \$1.50 to \$2.00 and \$2.50 each. Singles, pairs, or trios.
WM. ANDERSON, Dover, Illinois.

Wants and Exchange.

WANTED.—Early American and foreign books on bee-keeping.
A. L. BOYDEN, Medina, Ohio.

WANTED.—To exchange a 6x9 improved Victor hand and foot lever self-inking printing-press, almost new, cost \$60, for foot-power circle and scroll-sawing machine, extracted honey, books, offers, type, etc. Particulars free. W. H. GARDNER, Roxabel, O. Rt. 1.

WANTED.—To let, apiary of over 300 colonies on five years' time. Produced \$8.00 per colony this year. Great opportunity in Colorado.
MILLER PRODUCE CO., Timnath, Colo.

WANTED.—100 hybrid queens, common black and Italian, 1907 hatch, for early May delivery. Address
H. A. HARTMAN, Yerington, Nev.

WANTED.—I should like to correspond with party that would let his bees on shares in Colorado, Wisconsin, or Nevada. C. S. HURLBUT, Ft. Collins, Col.

WANTED.—Ten-inch foundation mill for deep-cell heavy brood.
OLIVER FOSTER, Boulder, Colo.

WANTED.—To exchange, three colonies bees for 200 egg sure-hatch incubator, used one season.
JOHN W. OLSON, Rt. 1, Stratford, Ia.

WANTED.—To exchange Reliable incubator complete for Edison photograph, 32-40 Marlin rifle, or offers.
LORENZO CLARK, Winona, Minn.

WANTED.—To print you 100 up-to-date calling or business cards, for 40 cts. in stamps. 500 for \$1.00.
H. H. HAWLEY, JR., Concord June, Mass.

WANTED.—Refuse from the wax-extractor, or slumgum. State quantity and price.
OREL L. HERSHISER,
301 Huntington Ave., Buffalo, N. Y.

WANTED.—To exchange modern firearms for Indian relics.
WM. S. AMMON,
4432 So. Grand Ave., St. Louis, Mo.

WANTED. Old combs for rendering. Also slumgum and beeswax. State quantity and price.
F. W. LESSER, Sta. A. Syracuse, N. Y.

Honey and Wax Wanted.

WANTED.—Fancy white-clover comb honey. Write us.
INDIANAPOLIS DAIRY CO., Indianapolis, Ind.

WANTED.—Comb, extracted honey, and beeswax. State price, kind, and quantity.
R. A. BURNETT, 199 S. Water St., Chicago, Ill.

WANTED.—Beeswax. We will pay 30 cts. per pound for fancy pure yellow beeswax delivered in New York until further notice. CHAS. ISRAEL & BROS.,
486 Canal St., New York City.

WANTED.—20,000 pounds pure clover honey. Send average sample and state best price.
J. E. CRANE & SON, Middlebury, Vt.

WANTED.—Fancy white comb honey, also extracted honey in barrels. Send samples, and name best price delivered here.
GRIGGS BROS., Toledo, O.

WANTED.—Well-ripened basswood or clover honey. Prompt payment on receipt; 8¼ cts. per pound, f. o. b. West Bend.
H. C. AHLERS, West Bend, Wis.

WANTED.—Immediately, honey in large and small lots for spot cash. Only dealer in Utah selling Root's goods at factory prices. Write us.
SUPERIOR HONEY CO., Ogden, Utah.

WANTED.—In large or small lots, No. 1 white and amber extracted honey in 60-pound cans or barrels. Send sample and quote lowest cash price delivered in Preston.
M. V. FACEY,
Preston, Fillmore Co., Minn.

WANTED.—Beeswax. Will pay spot cash and full market value for beeswax at any time of the year. Write us if you have any to dispose of.
HILDRETH & SEGELKEN,
265-267 Greenwich St., New York.

WANTED.—To sell 4000 lbs. of white-clover extracted honey, put up in 2-lb. paper bags, and 1000 lbs. of same in 5-lb. bags at 9 cts. per lb., f. o. b. Flint, Mich. Cash to accompany order. This honey was not extracted until dead ripe, and is solid now.
LEONARD S. GRIGGS, Flint, Mich., Rt. 5.

Honey and Wax For Sale.

FOR SALE.—Clover honey in 60-lb. cans at 8 cts.
MRS. C. L. PARKER, Sta. A., Syracuse, N. Y.

FOR SALE.—Fall honey in 60-lb. cans at 7 cts. per lb.
C. E. CROWTHER & SON, N. Kingsville, O.

FOR SALE.—Buckwheat honey in 60-lb. cans, at 6c per lb.
C. J. BALDRIDGE,
Homestead Farm, Kendaia, Seneca Co., N. Y.

FOR SALE.—50,000 pounds California water-white extracted honey by the case or car.
H. J. MERCER, 731 E. Third St., Los Angeles, Cal.

FOR SALE.—Four barrels broken comb honey, white clover; weight about 600 lbs. Price 8 cts. per lb., cash f. o. b.
C. H. W. WEBER, Cincinnati, Ohio.

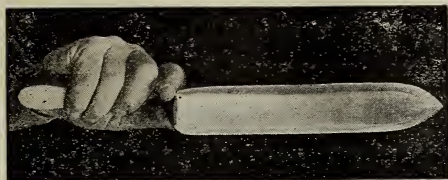
FOR SALE.—Fancy basswood and clover honey in barrels or 60-lb. cans; sample 10 cts., which may be deducted when ordering. ROBT. A. HOLEKAMP & SON,
4263 Virginia Ave., St. Louis, Mo.

FOR SALE.—2000 lbs. of Colorado alfalfa extracted honey. It is ripe, rich, and thick; 60-pound tin cans, two in a case, at \$10.00 a case.
A. A. LYONS, Fort Collins, Colo.

FOR SALE.—Choice extracted clover and basswood honey in 60-pound cans. It was extracted at end of season, and is very thick and well ripened. Sample free.
J. F. MOORE, Tiffin, Ohio.

FOR SALE.—541 lbs. of No. 1 buckwheat comb honey; also 293 lbs. of clover that was finished out with buckwheat. It is in 24-section no-drip shipping-cases that weigh from 21 to 24 lbs. net per case. It is in 4¼ sections. This is a fine bunch of honey, and can not be compared with the ordinary; 12½ cents buys it F. O. B. here.
E. D. TOWNSEND, Remus, Mich.

of making the shank wider and rolling the edges over. This not only serves as an easy grip for thumb and finger but stiffens the shank as well. A patent was issued to The A. I. Root Co. on this improvement in No-



vember, and we will be prepared to supply this as well as the old style. Either one at the same price, 70 cts. each; by mail, 80 cts.; a longer and heavier knife for 10 cts. extra.

BOOKS RECEIVED.

SCIENTIFIC CONFIRMATIONS OF OLD-TESTAMENT HISTORY, BY GEORGE FREDERICK WRIGHT.

In some ways this is a remarkable book. It deals with an old subject on entirely new lines. To argue fairly and squarely on purely scientific lines for the truthfulness of the Bible narrative is really something. For example, the destruction of Sodom and Gomorrah is accounted for by an explosion of natural gas right beneath them, because the geological strata in that country favor this. The author gives proof of this probability by the enormous production of oil and gas in the Baku region in Russia, where the formation of the earth is similar.

The Deluge is accounted for on purely scientific evidence, for there is excellent proof in many parts of the world of a deluge. Usually when authors write on a subject like this they are deficient in some respect—they either lack in scientific knowledge or they suffer in the opposite direction, and are not sufficiently well educated in Biblical knowledge, and frequently they try to prove too much. It is not so in this case, for the author evidently possesses a wide knowledge of the science of the earth, coupled with an excellent knowledge of the geography of the world, gained by traveling over an immense portion of the earth's surface. The writer is well known as the author of several popular scientific books. In addition he is a deep student of the Bible, being Professor of the Harmony of Science and Revelation at Oberlin College, Ohio. This is a valuable book to Bible students.

(The Bibliotheca Sacra Co., Oberlin, O. \$2.00 net.)

Convention Notices.

The 32d annual convention of the Vermont Bee-keepers' Association will be held in the parlors of the Addison House, Middlebury, Vt., Jan. 24.

W. G. LARRABEE, Sec.

The annual meeting of the Wisconsin State Beekeepers' Association will be held in the court-house, city of Madison, Wednesday and Thursday, February 6th and 7th. Reduced rates on all railroads; but if you can not obtain them, ask your agent for full-fare receipt. The question-box will be the main feature, and we want every bee-keeper who has one or more questions of interest to mail them to the secretary, prior to the convention, that they may be properly arranged. Bring choice samples of honey or any thing of interest for a good honey display.

GUS. DITTMER, Secretary, Augusta, Wis.

The 27th annual session of the Colorado State Beekeepers' Association will be held in the Chamber of Commerce Building, Denver, Colorado, January 22, 23. The State Horticultural Association, the State Forestry Association, the Dry Farmers' Congress, the American National Stock-Growers' Association, the Colorado Cattle and Horse Growers' Association, will all hold their annual sessions in Denver during the same week. Besides this there will be the greatest live-stock show held in Denver that ever came off west of Chicago. The railroads have made a fare of one and a third for the round trip for this week, which should assure us a large attendance. A section-putting-up contest will be a feature of our meeting.

FRANK RAUCHFUSS, Vice-president.

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It while It Lasts

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Virtually Free. This elegant pen, which is beautifully chased, and warranted not to leak, scratch, or blot, will be sent to old and new subscribers upon receipt of a year's subscription and fifty (50) cents additional. The pen compares favorably with any \$2.00 pen on the market to-day, and every reader of this paper should secure one while the offer lasts.

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Steel corrodes, ink-stands become dry, but not so with a Solid Gold Fountain Pen. It is always ready for use, and, moreover, pointed with iridium, it is well nigh indestructible.

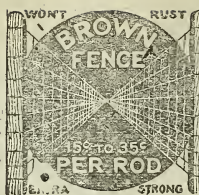
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Subscribe to-day and secure an article of merit and usefulness.

The cut shows the exact size of the pen.



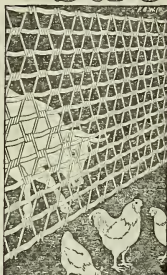
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Sample Sent Free Brown Fences are made of the highest grade of Spring Steel Wire. Both strand and stay wires No. 9 gauge, thickly galvanized. Test our sample for strength. File the galvanizing and see how thick the coating. Any trial will prove it strong, solid, substantial and durable. Requires less posts than most fences and is guaranteed to outlast any two of light weight fences. Ask for free sample and catalog of 133 styles. Freight Paid on 40 rods or more. **THE BROWN FENCE & WIRE CO., Cleveland, O.**

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When you buy our **High Carbon Coiled Spring Fence** you buy strength, service and durability combined. Twenty years of experience—hard knocks, taught us that the best fence is made from heavily galvanized **Coiled Spring Steel Wire**

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Our Fence is so closely woven that small pigs cannot "wriggle" through it. So strong the vicious bull cannot "faze" it. We have no agents and do not sell to dealers but sell direct to the user

AT WHOLESALE PRICES FREIGHT PREPAID

Coiled Wire provides for expansion and contraction and prevents sagging between posts. Every pound of wire used in the construction of our fence is made in our own mill from the best high carbon steel obtainable. We give

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BOX 101. WINCHESTER, INDIANA.

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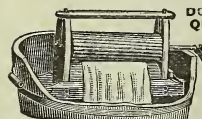


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The machine with a record. No rubbing No dirt. **AGENTS WANTED.**

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PATENTS

No attorney's fee until patent is allowed. Write for "Inventor's Guide."

FRANKLIN H. HUGH, Atlantic Bldg., Washington, D. C.

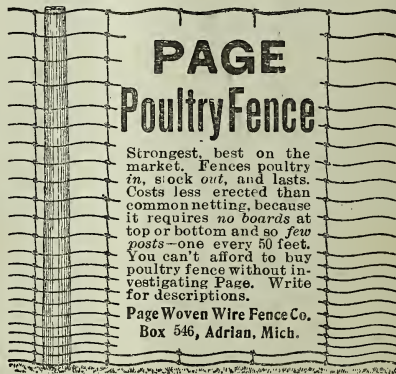
PATENTS.

Twenty-five Years' Practice.

PRINDLE & WILLIAMSON,

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Patent practice in Patent Office and Courts.
Patent Counsel of The A. I. Root Co.



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Made in over 100 different styles—every one warranted. Agents wanted No dirt, smoke or odor. Everywhere. **THE BEST LIGHT COMPANY,**
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